

**IN THE UNITED STATES DISTRICT COURT  
FOR THE DISTRICT OF DELAWARE**

VOLTERRA SEMICONDUCTOR  
LLC,

Plaintiff,

v.

MONOLITHIC POWER SYSTEMS,  
INC.,

Defendant.

C.A. No. 19-2240-CFC

**JOINT CLAIM CONSTRUCTION BRIEF**

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## **I. INTRODUCTION**

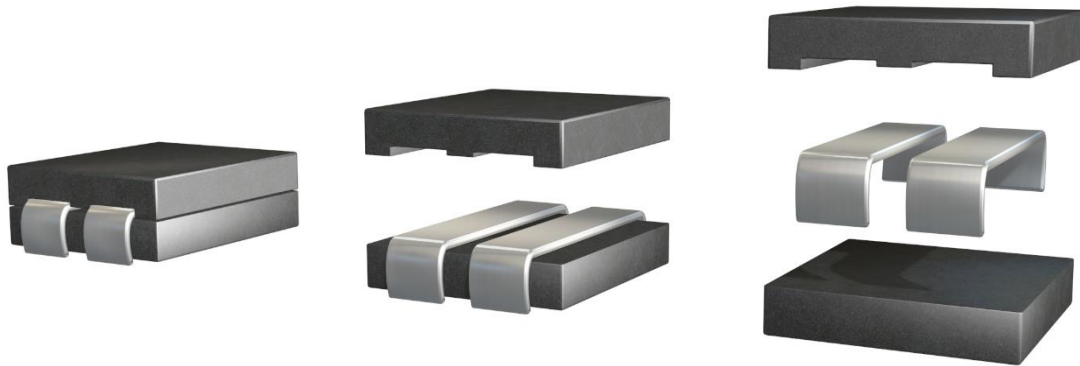
### **A. Plaintiff's Opening Position**

#### **1. DC-to-DC Converters**

This case is about a type of DC-to-DC power converter known as a switching voltage regulator, and more specifically, the use of a coupled inductor architecture in such converters. The converters at issue here convert an input voltage to a regulated output voltage by storing energy from the input voltage source in energy storage components (such as inductors). The converters use switches that alternatively activate to store energy and release the stored energy to the output in a controlled fashion, hence the name switching voltage regulators.

Inductors are electrical components that can store energy in a magnetic field. A simple inductor is a coil of wire (a “winding”) arranged about a magnetic material like ferrite. Electric current flowing through the winding creates a magnetic field that stores energy. A coupled inductor is an inductor with two or more windings arranged such that the magnetic fields produced by the windings interact with one another.

Inductors in switching voltage regulators are typically implemented via wire coils wound about a magnetic core. In commercial practice, “staple” type coupled inductors are common and include two windings sandwiched in the middle of magnetic material, as shown below:



## **B. Defendant’s Answering Position**

In order to assist the Court with claim construction, as requested at the May 12, 2021 status conference, MPS identifies the following ranking of the importance of the terms in dispute:

1. “a magnetic core including . . . N-1 passageways” (’408 Claim 14) / “[a/the] magnetic core forming a passageway” (’955 Claims 1, 12, 16, and 23)
2. “N connecting magnetic elements” / “each connecting magnetic element being coupled to the first and second magnetic elements” (’408 Claim 14)
3. “common core” (’986 Claim 17)
4. “orienting, in like direction” (’986 Claim 17)
5. “extending to the bottom side of the magnetic core” (’955 Claim 12)
6. “contacting” (’955 Claim 23)
7. “wound about” (’408 Claim 14)

MPS maintains that the remaining terms’ plain and ordinary meanings in light of the specification are as follows, but withdraws them from consideration in

light of the Court’s guidance to limit the number of terms in dispute to the most important:

Term	Claims	Meaning
“a [first/second] number of turns”	’986 Claim 23	“two or more turns”
“winding(s)”	’986 Claims 17, 18, 20, 21, and 23	“a conductor completing at least one full turn around a magnetic core”
“planar surface	’955 Claim 23	“flat surface”

Further, MPS understands that the Court prefers not to decide indefiniteness at claim construction. As such, MPS withdraws the indefiniteness disputes at this time. Further to the Court’s guidance, MPS is prepared to address the indefiniteness of “reducing ripple,” “to increase coupling between the windings,” and “outer leg” with a summary judgment motion. *See* Hr’g Tr. (May 12, 2021) at 18:22-24.

MPS also notes that, given the nature of the technology at issue, the Court may appreciate a technical tutorial in advance of the Markman hearing. MPS stands ready to provide one should the Court wish to receive one.

### **C. Plaintiff’s Reply Position**

Volterra served its opening brief based upon the terms that MPS insisted were not plain meaning or were indefinite and (according to MPS) must therefore be construed. As a result, Volterra initially briefed all fourteen terms proposed by MPS in the Joint Claim Construction Statement (“JCCS”). (D.I. 134.) At the

status conference in between Volterra's opening brief and MPS's responsive brief, the Court informed MPS that it needed to streamline the number of disputed terms and that allegations of indefiniteness are not addressed at Markman. (2021-05-12 Hearing Transcript at 32:14-33:5.)

MPS's responsive brief addresses eight terms in detail. But for three additional terms, MPS takes its previous "not ordinary meaning" proposed claim construction from the JCCS and asks the Court to adopt these constructions as the ordinary meaning of the three terms. MPS has not briefed these three additional terms, and Volterra disputes that MPS's proposed constructions are the ordinary meaning. Volterra respectfully requests that the Court's Claim Construction Order state that the terms "a [first/second] number of turns," "windings," and "planar surface" are given their ordinary meaning by the jury, without the further explication proposed by MPS.<sup>1</sup>

#### **D. Defendant's Sur-Reply Position**

In Volterra's Reply, it claims MPS's constructions must be incorrect, but cannot articulate what the proper constructions should be. Volterra makes repeated incorrect claims that MPS relies on no intrinsic evidence, incorrectly assumes

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<sup>1</sup> Volterra's opening brief as served on MPS addressed why these terms should be given ordinary meaning. (Joint Brief at 44-47 and 92-93.) Volterra expects that those portions of its opening brief will be part of the parties' joint filing with respect to these three terms, and therefore, Volterra will not repeat its arguments on those three terms here.

every claim must include all disclosed scope of a specification, and creates strawmen to respond to instead of MPS's actual arguments. Volterra's "plain meaning" constructions do not resolve the parties' disputes. MPS's constructions do, and should be adopted.<sup>2</sup>

## II. ASSERTED PATENTS

### A. Plaintiff's Opening Position

#### 1. U.S. Patent No. 6,362,986

The '986 patent describes a DC-to-DC converter configured "so as to increase coupling between windings and to reduce ripple current associated with the output voltage." (D.I. 134-1 at 2:3-24.) Current "ripple"<sup>3</sup> generates unwanted variations in the output voltage and generally lowers efficiency of the converter. The '986 patent explains that "[t]he prior art has sought to reduce the current ripple in multiphase switching topologies by coupling inductors," but those solutions "only offer[] slight reduction in ripple at some duty cycles for limited amounts of coupling." (*Id.* at 1:48-49, 1:57-59.) In particular, "[i]n designing systems with prior art methods, one would have to take care in designing to some optimal amount of coupling." (*Id.* at 8:29-31.) Further, "[t]he prior art has not taught maximizing coupling between windings on a common core to reduce ripple

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<sup>2</sup> Volterra's request that MPS be barred from explaining the plain meaning of the terms MPS withdrew at the Court's instruction is improper and should be denied.

<sup>3</sup> The phrases "ripple current" and "current ripple" may be used interchangeably.

current” because “[i]n the prior art, with [perfect coupling], the ripple reduction no longer functioned properly.” (*Id.* at 6:5-7, 8:28-29.)

## **2. U.S. Patent Nos. 7,525,408 and 7,772,955**

The ’408 and ’955 patents share the same specification and generally describe the “construction of a coupled inductor within a multi-phase DC-to-DC converter.” (D.I. 134-3 at 1:15-18.) These patents propose innovative designs for “coupled inductors” that, for example, integrate multiple inductors on a common magnetic core. (*See e.g., id.* at FIGS. 2-10.) The individual inductors on the shared core can each connect to a different phase of the DC-to-DC converter, and the coupling that results from this arrangement can yield desirable benefits such as current ripple reduction during sequential switching. (*Id.* at 2:32-36, 4:15-17.)

Figure 2 illustrates one embodiment of the coupled inductors disclosed in the patents:

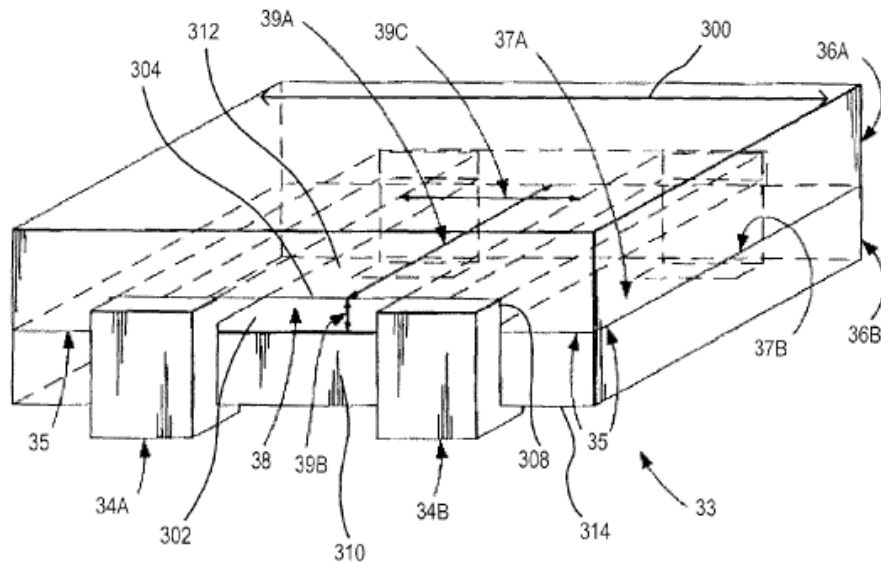


FIG. 2

Specifically, “FIG. 2 shows a two-phase coupled inductor 33,” which “include[s] a first magnetic core 36A and a second magnetic core 36B.” (*Id.* at 4:15-19.) “The first and second magnetic cores 36A, 36B, respectively, are coupled together such that planar surfaces 37A, 37B, respectively, of each core are substantially aligned in a common plane, represented by line 35,” and “[w]hen the two magnetic cores 36A and 36B are coupled together, they cooperatively form a single magnetic core for use as a two-phase coupled inductor 33.” (*Id.* at 4:19-25.) FIG. 2 also shows a pair of windings 34A, 34B formed from a conductive material wound about the core through passageway 38. (*Id.* 4:30-48.)

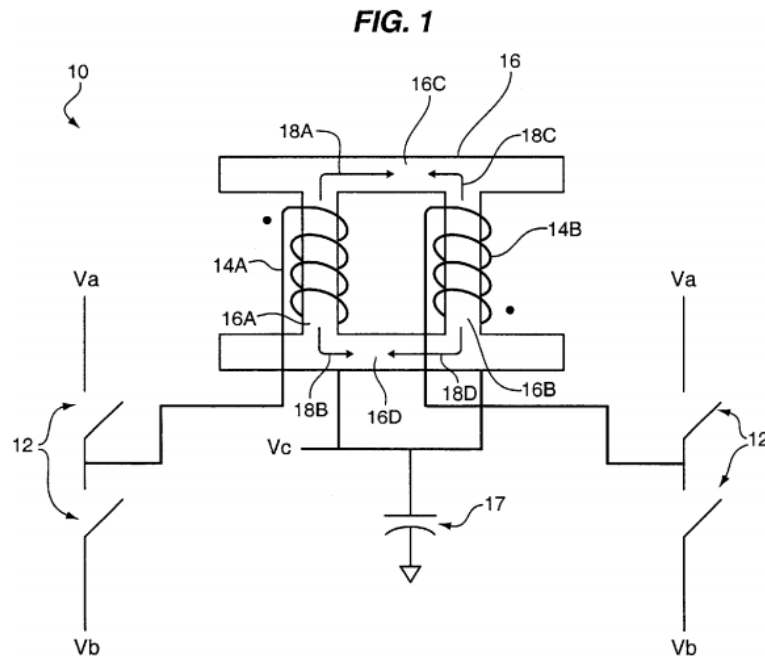
## **B. Defendant's Answering Position**

### **1. U.S. Patent No. 6,362,986**

The '986 Patent relates to DC-to-DC power converters, which are used in electric circuits to change a voltage from one value to another. *See* '986 Patent at Abstract. The '986 Patent states that “[o]ne specific object of the invention is to provide a converter with two or more windings wound around a common core to preferentially maximize coupling between windings.” *Id.* at 1:63-65.

Figure 1 of the '986 Patent (reproduced below) shows a DC-to-DC converter in accordance with one embodiment of the invention. In this figure, windings 14A and 14B are wound about two “rungs” 16A, 16B of a “common” magnetic core 16. *Id.* at 5:7-13. The '986 Patent states that windings are in the “same” or “like” orientation when “current flow toward V<sub>c</sub> in both [windings] to flux flow in opposite direction ... .” *Id.* at 7:20-22. The '986 Patent states that the “prior art has not taught maximizing coupling between windings on a common core to reduce ripple current” and that “[t]his coupling is achieved in part because of the like orientation of the windings 14A, 14B about rungs 16A, 16B, and in part by using as little as practical air gap in the flux path 18 through the windings.” *Id.* at 6:5-10. According to the '986 Patent, “the magnetizing inductance is greater than at least three times the leakage inductance of either winding” in a preferred embodiment. *Id.* at 6:13-15.





'986 Patent at Fig. 1.

The '986 Patent discusses and attempts to distinguish over a prior art article in the background section. This article is entitled *Investigating Coupling Inductors in the Interleaving QSW VRM*, IEEE APEC (February 2000) ("Wong *Investigating*"). (JA-001-JA-007). The '986 Patent characterizes this article in the following way:

In one article, Wong, *Investigating Coupling Inductors in the Interleaving QSW VRM*, IEEE APEC (February 2000), slight benefit is shown in ripple reduction by coupling two windings using presently available magnetic core shapes. However, the benefit from this method is limited in that it only offers slight reduction in ripple at some duty cycles for limited amounts of coupling.

'986 Patent at 1:53-59.

The DC-to-DC converter disclosed in *Wong Investigating* is nearly identical to the one disclosed and claimed in the '986 Patent. For example, Figure 3 of *Wong Investigating* (reproduced below) shows a DC-to-DC converter with two windings (labeled  $L_1$  and  $L_2$ ) oriented in “like” direction as part of a structure with two discrete magnetic cores. The windings are oriented in “like” direction based on how the two dotted lines of magnetic flux are in opposite directions (clockwise and counterclockwise). JA-001-JA-007, *Wong Investigating* at JA-003.

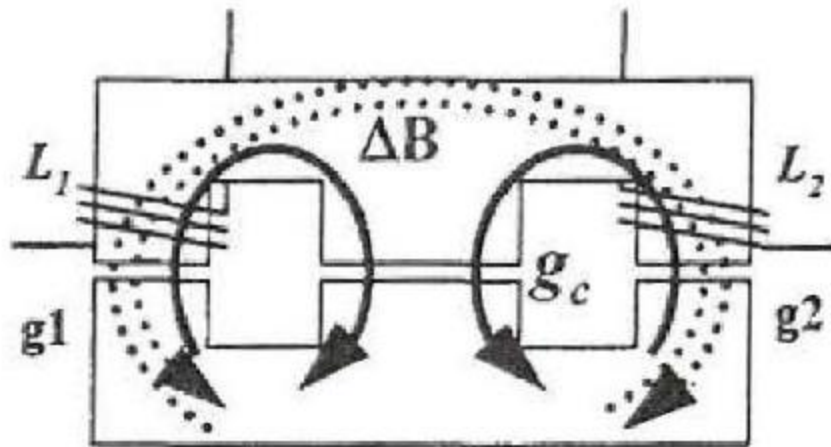


Figure 3 Core structure of the proposed integrated magnetic

The only material difference between what is shown in Figure 3 of *Wong Investigating* and what is shown in, for example, Figure 1 of the '986 Patent is that there are two discrete E-shaped magnetic cores that are physically separated from each other in Figure 3 of *Wong Investigating* whereas the magnetic core in Figure 1 of the '986 Patent is a continuous core. Compare Figure 3 of JA-001-JA-007, *Wong Investigating* with Figure 1 of the '986 Patent.

## 2. U.S. Patent Nos. 7,525,408 and 7,772,955

Both of these patents share a specification, as Volterra states. Indeed, these patents are each divisions of U.S. Patent No. 7,352,269 (“the ’269 patent”), their common underlying parent. The parent application and each of these divisions are directed to “[m]ethods and structures for constructing a magnetic core of a coupled inductor.” *E.g.*, ’408 Patent at Abstract. These structures fall into two distinct types of structures: single core embodiments with a passageway, and embodiments with two core elements separated by a gap. The asserted claims of both patents are directed to the former, and not the latter.

Indeed, during the prosecution of the ’269 Patent, the common parent, the examiner asked the applicants to explain whether a “gap” structure and a “passageway” structure were the same. JA-008-JA-038, 7,352,269 Patent Prosecution History, Response to Office Action (September 14, 2005) at JA-030-JA-031. The applicants responded clarifying that they are not, particularly where the claim language specifies it is claiming “a” or “the” magnetic core:

Regarding claim 39, the Examiner poses the question “Does this ‘gap’ structure the same with the ‘passageway’ structure in claim 36?” The language of these claims makes it clear that **the “gap” recited in claim 39 is not the “passageway” of claim 36. Claim 36 requires “a magnetic core” and “the magnetic core forming at least one passageway.” Claim 39 requires “the magnetic core comprises: a first magnetic core element; and a second magnetic core element separated from the first magnetic core element to form a gap.” Therefore claim 36 recites a passageway within a single magnetic core, while claim 39 requires two magnetic core elements separated by a gap.** Gaps

between magnetic cores, (e.g. corresponding to the language of claim 39) are found in the specification, for example at paragraph [0037] (discussing FIG. 5) and paragraph [0054] (discussing FIG. 14).

*Id.* (bold added, underline original).

Because of the number of different, distinct embodiments present in the specification for these patents, during examination of both asserted patents the examiner had the applicant elect specific species from the specification for consideration. For the application that would become the '955 Patent, the applicant elected Figure 2 (annotated below). JA-039-JA-042, '955 Patent Prosecution History, Response to Restriction Requirement (March 26, 2008) at JA-041-JA-042; *see also* JA-043-JA-050, '955 Patent Prosecution History, Response to Restriction Requirement (June 30, 2009) at JA-049.

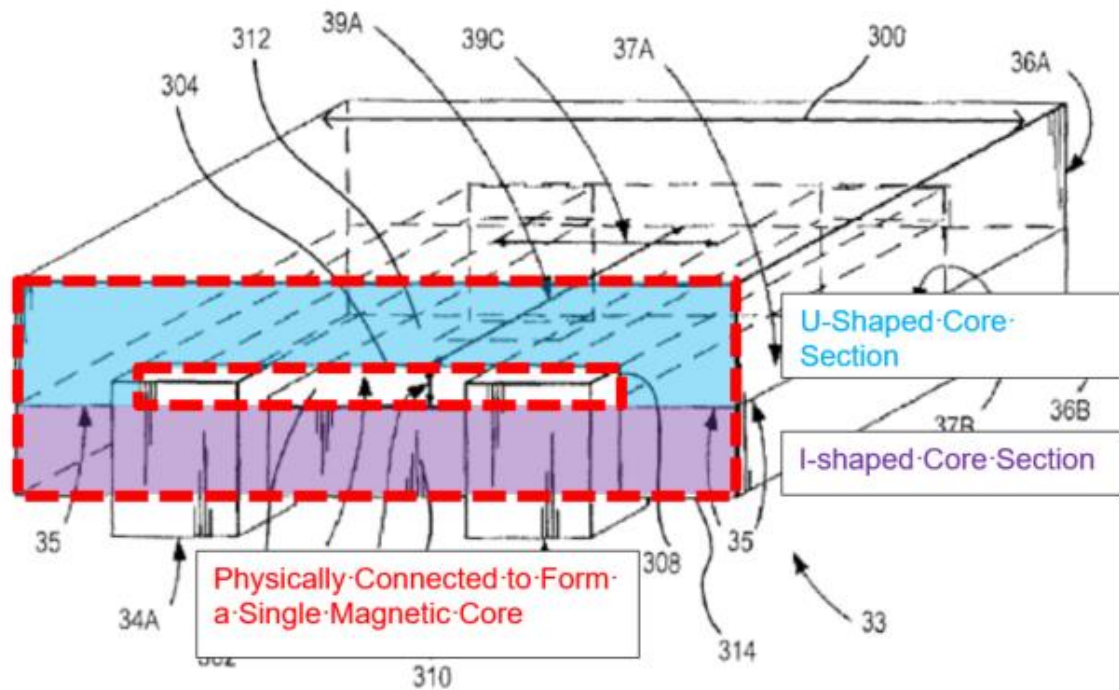
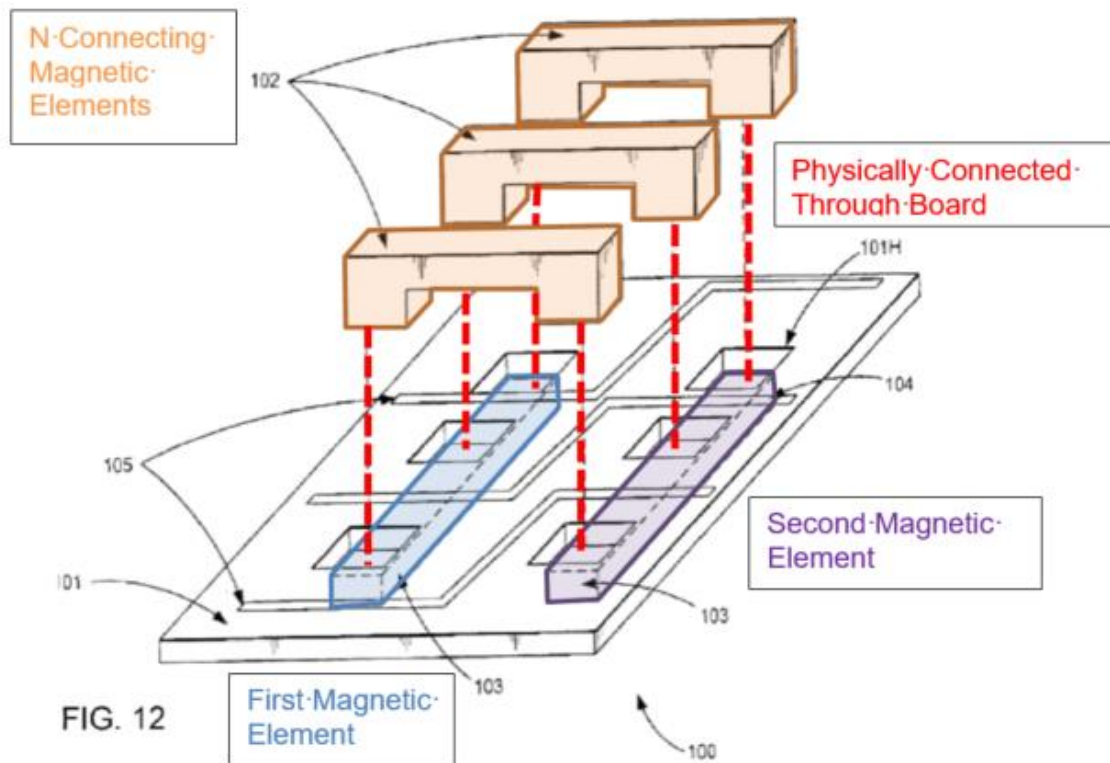


FIG. 2

'955 Patent at Fig. 2 (annotated). Figure 2 shows how “the first magnetic core 36A,” a U-shaped piece of ferromagnetic material (shown above in blue) and a “second magnetic core 36B,” an I-shaped piece of ferromagnetic material (shown in purple) are “coupled together [to] cooperatively form a single magnetic core for use as a two-phase coupled inductor” (shown by the red dotted line). *Id.* at 4:15-25.

For the application that would become the '408 Patent, the applicant instead elected the embodiment shown in Figures 11-13. JA-051-JA-058, '408 Patent Prosecution History, Response to Restriction Requirement (March 26, 2008) at JA-057-JA-058. The structure of this core can be seen easiest in Figure 12:



'408 Patent at Fig. 12 (annotated). Here, rather than connect the first and second magnetic elements directly, the specification teaches the use of “staple magnetic cores” which “connect, or staple, through PCB 101 to bus bars 103” to form the magnetic core. *Id.* at 9:48-10:54. The specification explains that the connecting staple magnetic core elements “physically couple to the bus bars” that make up the first and second magnetic elements. *Id.* at 9:54-58.

### III. LEGAL STANDARDS FOR CLAIM CONSTRUCTION

#### A. Defendant's Answering Position

“A fundamental rule of claim construction is that terms in a patent document are construed with the meaning with which they are presented in the patent

document. Thus, claims must be construed so as to be consistent with the specification, of which they are a part.” *Merck & Co. v. Teva Pharms. USA, Inc.*, 347 F.3d 1367, 1371 (Fed. Cir. 2003); *Phillips v. AWH Corp.*, 415 F.3d 1303, 1316 (2005) (*en banc*). *Phillips* further summarizes how to arrive at “the correct construction”:

Ultimately, the interpretation to be given a term can only be determined and confirmed with a full understanding of what the inventors actually invented and intended to envelop with the claim. The construction that stays true to the claim language and most naturally aligns with the patent’s description of the invention will be, in the end, the correct construction.

*Phillips*. at 1316 (quoting *Renishaw PLC v. Marposs Societa’ per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998)).

Claim construction involves consideration of the intrinsic evidence, which includes the claim language, specification, prosecution history, and cited prior art references. *See id.* at 1312-17. “First, [a tribunal must] look to the words of the claims themselves, both asserted and nonasserted, to define the scope of the patented invention.” *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996) (citation omitted). “[T]he context in which a term is used in the asserted claim can be highly instructive.” *Phillips*, 415 F.3d at 1314. “Importantly, the person of ordinary skill in the art is deemed to read the claim term . . . in the context of the entire patent, including the specification.” *Id.* at 1313. “The specification ‘is always highly relevant to the claim construction analysis. Usually,

it is dispositive; it is the single best guide to the meaning of a disputed term.” *Id.* at 1315 (quoting *Vitronics*, 90 F.3d at 1582). Claim constructions must not be “divorced from the context of the written description and prosecution history.” *Nystrom v. TREX Co., Inc.*, 424 F.3d 1136, 1144-45 (Fed. Cir. 2005); *see also Phillips*, 415 F.3d at 1320-21.

In addition to the claims and the specification, “a court ‘should also consider the patent’s prosecution history.’” *Phillips*, 415 F.3d at 1317 (citation omitted); *see also Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 913 (Fed. Cir. 2004). “[T]he prosecution history can often inform the meaning of the claim language by demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it would otherwise be.” *Phillips*, 415 F.3d at 1317.

A patent’s prosecution history “may be critical in interpreting disputed claim terms because it ‘contains the complete record of all the proceedings before the Patent and Trademark Office, including any express representations made by the applicant regarding the scope of the claims.’” *Sunovion Pharm., Inc. v. Teva Pharm. USA, Inc.*, 731 F.3d 127, 1276 (Fed. Cir. 2013) (quoting *Vitronics Corp. v. Conceptor, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996)). Indeed, courts must “examine the prosecution history to determine whether the patentee has relinquished a potential claim construction in an amendment to the claim or in an



argument to overcome or distinguish a reference” and “must look at the intrinsic evidence to determine whether the patentee has given a term an unconventional meaning.” *Bell Atl. Network Servs. v. Covad Communs. Group*, 262 F.3d 1258, 1268 (Fed. Cir. 2001). Accordingly, “[t]he doctrine of prosecution disclaimer is well established in Supreme Court precedent, precluding patentees from recapturing through claim interpretation specific meanings disclaimed during prosecution.” *Omega Eng'g, Inc. v. Raytek Corp.*, 334 F.3d 1314, 1323 (Fed. Cir. 2003) (internal citations omitted). However, even where “prosecution history statements do not rise to the level of unmistakable disavowal, they do inform the claim construction.” *Shire Dev., LLC v. Watson Pharm., Inc.*, 787 F.3d 1359, 1366 (Fed. Cir. 2015). Moreover, a patentee acts as lexicographer when the “‘use of two terms as alternatives’ functions as a redefinition of a term...‘so clear that it equates to an explicit one.’” *SkinMedica*, 727 F.3d at 1200 (Fed. Cir. 2013); *Thorner*, 669 F.3d at 1368 (Fed. Cir. 2012).

When the intrinsic evidence does not establish the meaning of a claim, extrinsic evidence (*i.e.*, all evidence external to the patent and prosecution history, including dictionaries, inventor testimony, expert testimony, and learned treatises) may also be considered. *Phillips*, 415 F.3d at 1317.

**B. Plaintiff's Reply Position**

MPS section of its brief on legal standards is contrary to the Scheduling Order. (D.I. 69 at 14.). Nevertheless, Volterra agrees that the quoted case law governs the parties' claim construction disputes.

**IV. AGREED-UPON CONSTRUCTIONS**

<b>Claim Term</b>	<b>Claim(s)</b>	<b>Agreed Construction</b>
“A method for reducing ripple in a DC-to-DC converter of the type producing an output voltage from an input voltage, comprising the steps of:”	’986 Patent, Claim 17	The preamble is limiting.
“An N-phase coupled inductor for magnetically coupling N phases of a power converter”	’408 Patent, Claim 14	The preamble is limiting.
“A two phase coupled inductor for magnetically coupling first and second phases of a power converter	’955 Patent, Claims 1, 23	The preamble is limiting.
“A coupled inductor”	’955 Patent, Claim 12	The preamble is limiting.
“A two phase DC-to-DC converter”	’955 Patent, Claim 16	The preamble is limiting.
“coupled inductor”	’408 patent, claim 14 ’955 patent, claims 1–3, 5, 10, 12–16, 23–28	“an inductor with two or more windings arranged such that the magnetic fields produced by the windings interact with one another”

## V. DISPUTED CONSTRUCTIONS

### A. “orienting, in like direction” (Claim 17 – ’986 Patent)

Volterra’s Construction	MPS’s Construction
plain meaning	original: “windings are wound in such a way so that mutual flux between the windings flows in opposite directions”  revised: “windings are wound in such a way so that flux between the windings flows in opposite directions [‘about the common core’]”

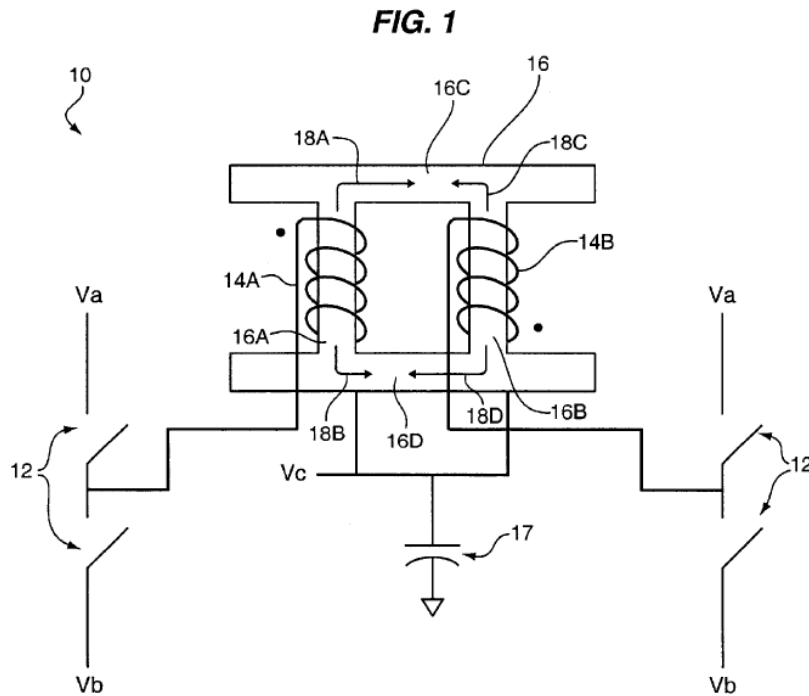
#### 1. Plaintiff’s Opening Position

The claim language surrounding this term makes clear that the purpose of the “orienting” is “to increase coupling between the windings.” Sufficient guidance is thus provided by the claim language itself, eliminating the need for any further construction of “orienting.” A fact finder will recognize that “orienting” the windings is simply positioning the windings to comply with the remaining claim limitations. Indeed, this is the understanding that MPS used when mapping prior art to this term in its IPR petitions. (IPR2020-1368, Paper 3, Petition for *Inter Partes* Review at 11-12; IPR2020-1370, Paper 3, Petition for *Inter Partes* Review at 11-12.)

MPS introduces confusion by referring to “mutual flux”—a new, technical term. The patent never uses the word “mutual” nor describes the requisite orientation in terms of “mutual flux.” Rather, the patent explains the correct orientation through a series of examples. (*See, e.g.*, D.I. 134-1 at 2:24-28 (“To

clarify what is intended by the orientation of the windings, when the two windings both have positive current, the flux generated around the main magnetizing flux path by one should be counterclockwise, whereas the flux generated by the other should be clockwise.”); 7:15-16 (“FIGS. 3A and 3B provide further understanding of how windings are properly oriented in accord with the invention.”).) By ignoring these examples and introducing “mutual flux,” MPS’s construction would unnecessarily confuse the jury.

MPS’s requirement of flux flowing “in opposite directions” also contradicts an embodiment described in the patent. The specification uses the scenario of Figure 1 as an example of the correct orientation, where “the two windings are wound around opposite sides of a square post, [and] both produce flux **in the same direction** in Cartesian coordinates, given positive current.” (*Id.* at 2:30-31 (emphasis added).)



By requiring opposite directions without specifying the frame of reference, MPS's proposed construction improperly reads out this embodiment.

## 2. Defendant's Answering Position

Volterra's Construction	MPS's Construction
plain meaning	"windings are wound in such a way so that flux between the windings flows in opposite directions [ 'about the common core' ]" <sup>4</sup>

<sup>4</sup> Volterra objects to MPS's proposal because it includes a "new, technical term:" "mutual." As a compromise, MPS's current proposal drops that term as unnecessary, because the proposal already includes the phrase "flux between the windings," which is "mutual" flux. Also, MPS added the phrase "about the common core" (as recited in claim 17 of the '986 Patent) in brackets to emphasize that while the phrase is not part of the construction for this term, it does offer context for how the term should be interpreted (i.e., that flux generated by the first

“Orienting, in like direction” is a technical term where the meaning would not be intuitively apparent to a juror, thus requiring a construction. MPS’s construction for this term is understandable and directly corresponds to the descriptions in the ’986 Patent. Volterra’s suggestion of “plain meaning” improperly leaves the jury to resolve the meaning of the term. *O2 Micro Intern. Ltd. v. Beyond Innovation Tech. Co., Ltd.*, 521 F.3d 1351, 1361 (Fed. Cir. 2008) (holding that plain and ordinary meaning may be inadequate when it does not resolve the parties’ dispute on claim scope).<sup>5</sup>

Volterra’s failure to offer a construction is particularly inappropriate here because the patent specification explains what is meant by this technical term. *See Every Penny Counts, Inc. v. Am. Express Co.*, 563 F.3d 1378, 1382 (Fed. Cir. 2009) (“In most cases, the best source for discerning the proper context of claim terms is the patent specification.”). In the context of this patent, “same” or “like” direction actually means the opposite direction. *See* ’986 Patent at 2:24-27 (“To clarify what is intended by the orientation of the windings, when the two windings

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and second windings about the common core flows counterclockwise and clockwise, or vice versa) within the claim language this term is found.

<sup>5</sup> Volterra’s argument that the “claim language surrounding this term makes clear that the purpose of the ‘orienting’ is ‘to increase coupling between the windings’” fails because “to increase coupling between the windings” is indefinite. Per the Court’s guidance to the parties, MPS will show why the term “to increase coupling between the windings” is indefinite in its forthcoming summary judgment motion. *See* Hr’g Tr. (May 12, 2021) at 18:22-24.

both have positive current, the flux generated around the main magnetizing flux path by one should be *counterclockwise*, whereas the flux generated by the other should be *clockwise*.”); 7:10-23 (“In structure 41, windings 42A, 42B *are considered in the same orientation because* a current flow toward  $V_c$  in both [windings] leads to *flux flow in opposite directions* around the main, ungapped path of the core 45, just as in FIG. 1.”).<sup>6</sup> Recognizing the inherent ambiguity in “orienting, in like direction,”—ambiguity Volterra wants to maintain—the ’986 Patent explains that, in the patent, two windings are in the “same” or “like” direction when flux between the windings flows in *opposite direction about the*

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<sup>6</sup> While MPS’s construction is correct and should be adopted by the Court, the technically precise meaning of “orienting, in like direction” is “windings are wound in such a way so that flux between the windings flows in opposite directions around the main, ungapped path of the common core when current flows in the windings toward the output voltage” or alternatively “windings are wound in such a way so that flux between the windings flows in opposite directions around the main magnetizing flux path of the common core when current flows in the windings toward the output voltage,” as the cited passages from the ’986 Patent indicate. The construction may also be framed in a technically precise way to highlight the counterclockwise and clockwise flow of flux as: “windings are wound in such a way so that flux between the windings flows clockwise for the first winding and counterclockwise for the second winding, or vice versa, around the main, ungapped path of the common core when current flows in the windings toward the output voltage” or alternatively “windings are wound in such a way so that flux between the windings flows clockwise for the first winding and counterclockwise for the second winding, or vice versa, around the main magnetizing flux path of the common core when current flows in the windings toward the output voltage.”

However, these constructions would be less helpful to the jury because they contain more technical jargon. If the Court disagrees and decides that one of these alternatives would be helpful to the jury, MPS would accept any of them.

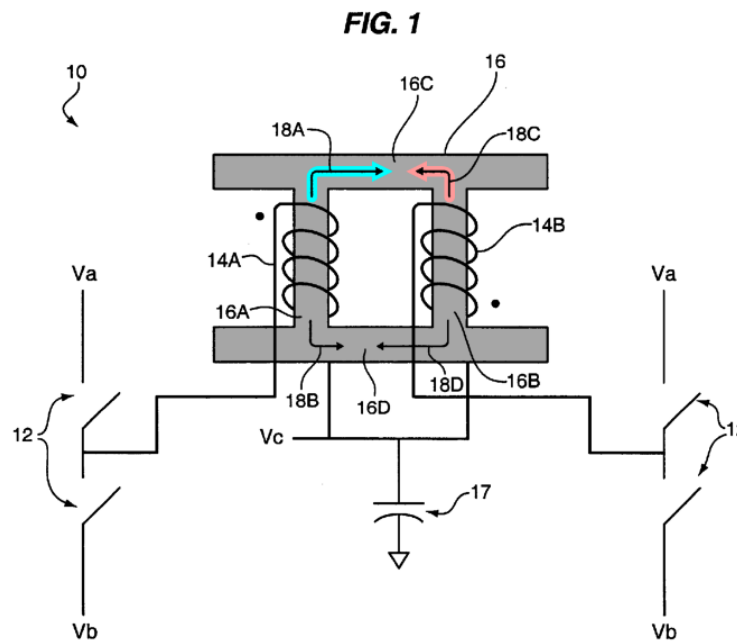


*common core* (e.g., clockwise, counterclockwise). This term needs construction because the '986 Patent uses the term in a way that would be counterintuitive to jurors. *See, e.g., Sulzer Textil A.G. v. Picanol N.V.*, 358 F.3d 1356, 166 (Fed. Cir. 2004) (explaining that the court needs to “provide the jury [] with instructions adequate to ensure that the jury fully understands the court’s claim construction rulings and what the patentee covered by the claims”).

Volterra mischaracterizes the '986 Patent’s disclosures to argue that MPS’s requirement of flux flowing in “opposite direction” contradicts one of the disclosed embodiments. Joint Brief at 20-22. The '986 Patent explains two windings have “like” orientation when the flux generated by the windings flows in opposite directions about the common core (clockwise for one and counterclockwise for the other). '986 Patent at 2:24-33. The patent then explains how this can be described as flux in the same direction *in Cartesian coordinates*, but, as explained below, this result means that the flux flows in opposite direction *about the common core*, as required by MPS’s construction. *Id.* at 2:28-33.

In discussing Figure 1 (shown annotated below), the specification explains that the windings 14A and 14B are wound in “like” direction. '986 Patent at 5:7-8. Further, the patent states that operation of the structure shown in Figure 1 is similar to operation of the structure shown in Figure 3A. *Id.* at 7:19-23 (“In structure 41, windings 42A, 42B *are considered in the same orientation because* a current flow

toward  $V_c$  in both [windings] leads to *flux flow in opposite directions* around the main, ungapped path of the core 45, *just as in FIG. 1.*"). If the current in both windings flows toward  $V_c$  in Figure 1 (as prescribed by the above passage), that means the flux generated by winding 14A will be in the direction of arrow 18A and the flux generated by winding 14B will be in the direction of arrow 18C, as indicated by the highlighted arrows below (i.e., in opposite directions about the common core). '986 Patent at 5:7-26; JA-059-JA-128, IPR2020-1368, Paper 9, at JA-077-JA-079; JA-129-JA-192, IPR2020-1370, Paper 9, at JA-147-JA-149. But the flow of flux about the common core can also be thought of as flow in the same direction *in Cartesian coordinates*, because the pair of red-blue arrows in annotated Figure 1 below are both pointed up before they turn left or right:



'986 Patent at Fig 1 (annotations added). Contrary to Volterra's position, that does not mean that the flux between the windings does not flow in *opposite directions about the common core*. See *id.* at 2:24-33; 5:7-26; 7:19-23; see also JA-059-JA-128, IPR2020-1368, Paper 9, at JA-077-JA-079; JA-129-JA-192, IPR2020-1370, Paper 9, at JA-147-JA-149. Volterra's mischaracterizations of the patent's disclosures provides a further reason why this term should be construed.

### 3. Plaintiff's Reply Position

MPS's construction injects confusion where none need exist. MPS edits its proposed construction in the JCCS to remove the word "mutual" and to add a bracketed clarification, but the need to use a bracketed phrase to "offer context for how the term should be interpreted" reveals that MPS's proposal is problematic at the outset. (Joint Brief at n.4.) Indeed, MPS proposes four more alternative constructions that it alleges are "the technically precise meaning of 'orienting, in like direction.'" (*Id.* at n.6.) MPS acknowledges that "these constructions would be less helpful to the jury because they contain **more** technical jargon," tacitly admitting that its other proposals also inject confusing jargon. (*Id.* (emphasis added).)

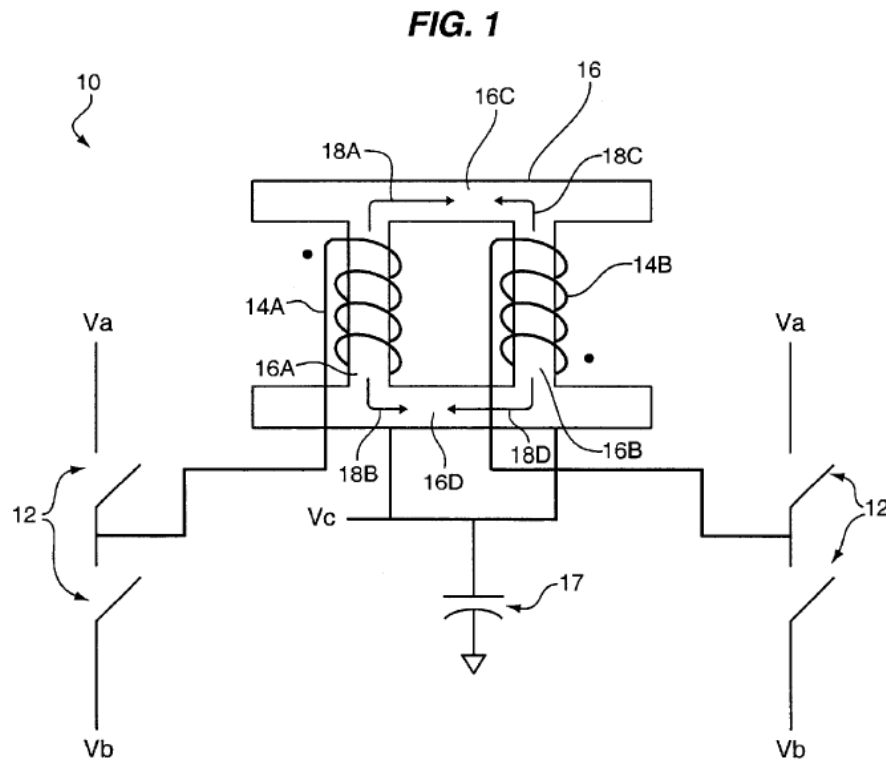
MPS's removal of the word "mutual" does not make its construction any less confusing. The jury will be unfamiliar with flux, whether it be "magnetizing flux" or "leakage flux," which are both addressed by the patent. Indeed, in claims that actually refer to one of these fluxes, the inventors explicitly defined the term to

remove any confusion. (*See* D.I. 134-1 at Claims 8, 29.) On the other hand, the jury needs no definition to comprehend what it means to “orient” two things in a “like direction,” especially when considered in the context of the examples provided by the specification. (*See, e.g., id.* at FIGs. 3A-B; 2:24-28; 7:15-160.)

MPS also mistakenly concludes that “[i]n the context of this patent, ‘same’ or ‘like’ direction actually means the opposite direction.” Not so. “Same” and “like” direction are used according to their ordinary meaning. (*Compare* Cl. 17 (“orienting, in like direction, first and second windings about a common core”), *with* Cl. 1 (“the first winding being wound about the core in a first orientation, the second winding being wound about the core in the first orientation”).)

The inventors knew how to claim aspects of the flux when they wanted to, and they did this separately from the windings’ orientation. For example, Claim 25 similarly requires “each of the N windings being wound about the core in like orientation.” Claim 29 depends from Claim 25 and adds the requirement that “one or more of the windings comprise a gapped high permeability element to carry at least part of a leakage flux, the leakage flux being defined as a flux present when each of the windings has an equal DC current.” As such, even when windings are oriented in a like orientation, they are capable of producing magnetizing and leakage fluxes—a distinction MPS’s proposal wholly ignores.

Like Claim 25, Claim 17 also separately claims the orientation of the windings and the current that flows through them. In particular, Claim 1 first requires “orienting, in like direction, first and second windings” and then requires “alternatively activating each winding.” The patent explains that “activation” is “when windings are coupled to a voltage,  $V_a$  or  $V_b$ ” and “effect a change of flux 18 in core 16.” (*Id.* at 5:14-16.) On the other hand, “orienting” the windings is unrelated to flux because each winding can generate flux in either direction after being oriented “in like direction.” (*Id.* at 5:20-26 (“when winding 14A is activated by  $V_a$ , an increase of flux in direction 18A is generated; when winding 14A is activated by  $V_b$ , an increase of flux in direction 18B is generated; when winding 14B is activated by  $V_a$ , an increase of flux in direction 18C is generated; when winding 14B is activated by  $V_b$ , an increase of flux in direction 18D is generated”).)



In sum, MPS’s proposal not only mistakenly attributes the generation of flux to the orientation of the windings, it also mistakenly concludes that flux can only flow “in opposite directions.”

#### 4. Defendant’s Sur-Reply Position

MPS’s construction is necessary because a juror would not know whether “orienting in like direction” means (1) physically orienting the windings in like direction, (2) orienting the winding current in like direction, or (3) orienting the magnetic flux flow in opposite directions. The specification clarifies “like direction” means that the flux flows in opposite directions. *See* ’986 at 7:19-23

(“[W]indings [] are considered in the same [or like] orientation because current flow toward V<sub>c</sub> in both [windings] leads to flux flow in *opposite directions*[.]”).

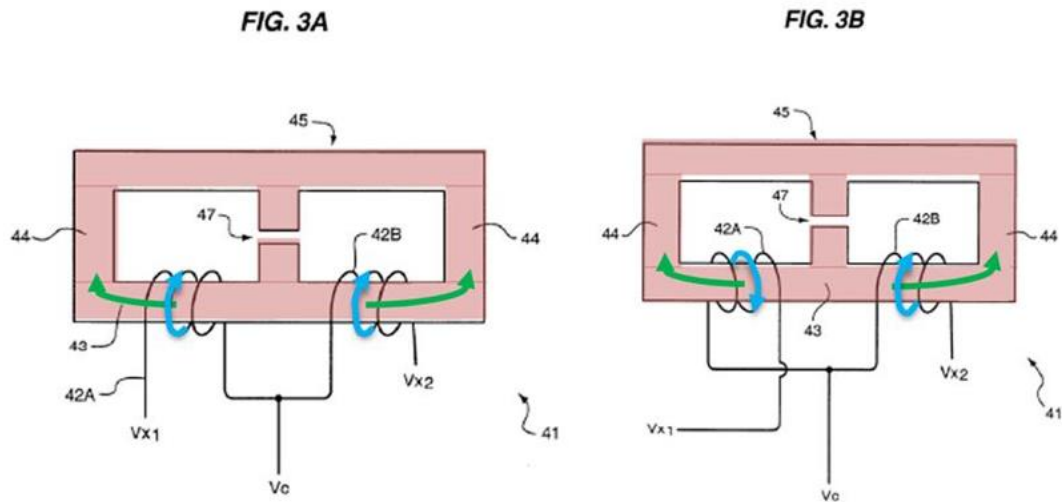
Volterra incorrectly argues that “same” and “like” are used according to their ordinary meanings and that no definition is needed “especially when considered in the context of the examples provided by the specification.” Joint Brief at 27-28. Volterra appears to construe this term to mean physically orienting the windings in like direction. *Id.* at 29 (“[O]rienting the windings is *unrelated to flux* because each winding can generate flux in either direction after being oriented ‘in like direction.’”); (“Like Claim 25, Claim 17 also *separately* claims the orientation of the windings and the current that flows through them.”) But the specification clarifies the opposite direction of flux flow, not the physical orientation of the windings, determines whether windings are oriented in “like” direction. *See, e.g.*, ’986 at 2:19-33; 7:19-23.<sup>7</sup>

Indeed, Volterra’s interpretation would read out an embodiment it admits is covered by claim 17. *See* Joint Brief at 21, 28 (*citing* Figures 3A-B). In annotated Figures 3A and 3B below, blue arrows indicate the physical orientation of the

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<sup>7</sup> Volterra complains that MPS’s proposed construction adds a bracketed clarification for the proposed construction—“[about a common core].” Joint Brief at 27. But the bracketed phrase comes directly from the claim language, giving context to the construction. *See* ’986 at claim 17, “orienting, in like direction, first and second windings *about a common core* to increase coupling between the windings”).

windings, and green arrows indicate the flux direction. In Figure 3A, both windings have the *same* physical orientation, but in Figure 3B both windings have *opposite* physical orientations. Importantly, however, the flux in *both* Figures 3A and 3B flows in opposite directions around the magnetic core:



While Figure 3B shows the physical orientation of the windings “reversed from Fig. 3A,” the “*flux directions for a particular current direction is the same*” for *both* figures, and thus, the windings are “properly oriented in accord with the invention.” *Id.* 7:26-32. But under Volterra’s construction, Figure 3B’s orientation would not be in like direction, reading out embodiments it admits are covered by the claim. *See* Joint Brief at 20-21; 27-28.

Volterra’s arguments underscore the jury confusion that would result if the Court does not adopt MPS’s proposed construction. The Court should construe this



term to clarify that “orienting, in like direction” in this context corresponds to flux flow in opposite directions.

**B. “common core” (Claim 17 – ’986 Patent)**

Volterra’s Construction	MPS’s Construction
plain meaning	original: “single magnetic core with no gap”  revised: “continuous magnetic core”

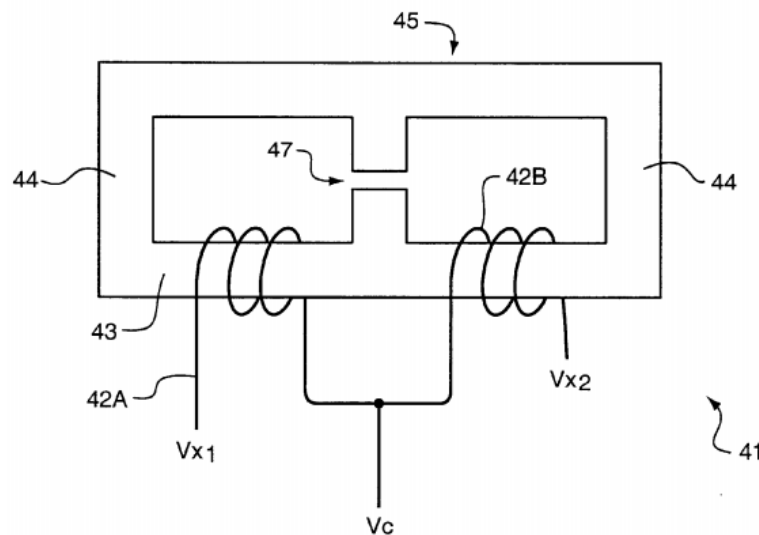
**1. Plaintiff’s Opening Position**

MPS’ proposed construction improperly excludes embodiments shown in the specification when it demands that the “common core” be a “single magnetic core.” Rather than limiting the core’s structure to a “single magnetic core,” the patent discloses embodiments where the core comprises more than one piece. For example, the specification explains that “another core structure supporting the invention includes a structure in the shape of two plates (disks, rectangles, or other shape) coupled by N columns.” (D.I. 134-1 at 4:4-6.) Claim 19 similarly captures an embodiment where the core is multi-piece by claiming “[t]he method of claim 17, further comprising the step of forming the core with **two substantially parallel core elements**, wherein the step of orienting comprises orienting each of the windings on a **separate core element**.” (*Id.* at 14:19-22); *Phillips v. AWH Corp.*, 415 F.3d 1303, 1314-15 (Fed. Cir. 2005) (“[T]he presence of a dependent claim

that adds a particular limitation gives rise to a presumption that the limitation in question is not present in the independent claim.”).

MPS doubles down on its error by further requiring a “core with no gap.” To the contrary, Figures 3A and 3B identify a core 45 with “a **gapped** center-leg 47.”

**FIG. 3A**



The specification similarly describes that “the leakage path may use an **explicitly gapped** high permeability core leg or shunt.” (*Id.* at 11:9-10 (emphasis added).) MPS’s proposal reads out these embodiments and should thus be rejected.

## 2. Defendant's Answering Position

Volterra's Construction	MPS's Construction
plain meaning	"continuous magnetic core" <sup>8</sup>

MPS proposes a simple construction to clarify that the term “common core” in the context of the '986 Patent means “continuous magnetic core.” MPS's construction correctly captures how a POSITA would construe this term in view of the '986 Patent's disclosures, particularly given how the patent attempts to distinguish itself from the prior art that used two discrete magnetic core elements separated by a gap, rather than a continuous magnetic core. *See SkinMedica, Inc. v. Histogen Inc.*, 727 F.3d 1187, 1200 (Fed. Cir. 2013) (explaining that a patentee acts as lexicographer when the “‘use of two terms as alternatives’ functions as a redefinition of a term . . . ‘so clear that it equates to an explicit one.’”) (quoting *Thorner v. Sony Computer Entm't Am. LLC*, 669 F.3d 1362, 1368 (Fed. Cir. 2012)).

The specification explains that a “common core” is a structure where the windings are coupled together on a continuous magnetic core. *See* '986 Patent at 2:59-63 (“The present invention actively seeks to couple windings together on the same core.”); 4:44-46 (“Fig. 8 shows a magnetic device with a **continuous** square core shape, and windings with equal and opposite voltage excitation, in accord

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<sup>8</sup> MPS has refined its proposed construction from “single magnetic core with no gap” to “continuous magnetic core” to further clarify that the magnetic core is a continuous structure as opposed to one with gaps resulting in two or more discrete elements.

with the invention.”); 12:29-31 (discussing Fig. 13 and stating that “[w]indings 202 couple with separate spokes 204 of structure 200; though spokes 204 and rim 206 form a *continuous* core 210.”); 12:36-38 (discussing Fig. 14 and stating that “[t]he two rings 252 and columns 254 form a *continuous* core, with windings 255 wound on columns 254.”).

FIG. 8

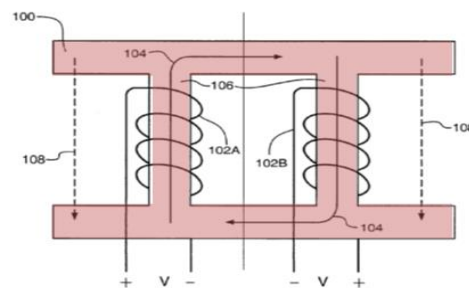


FIG. 13

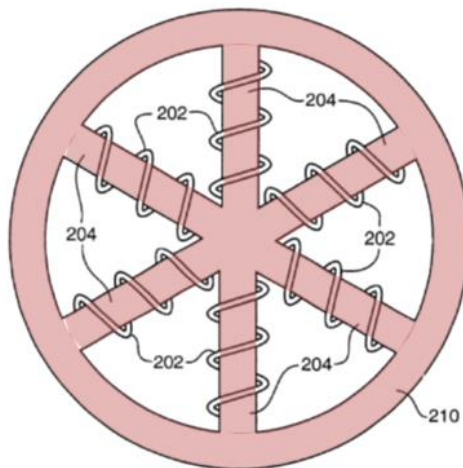
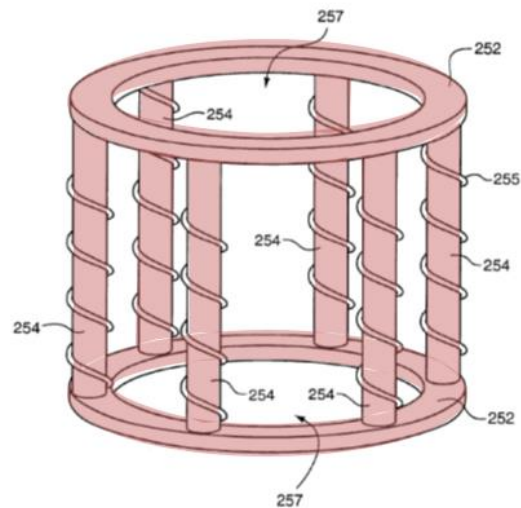


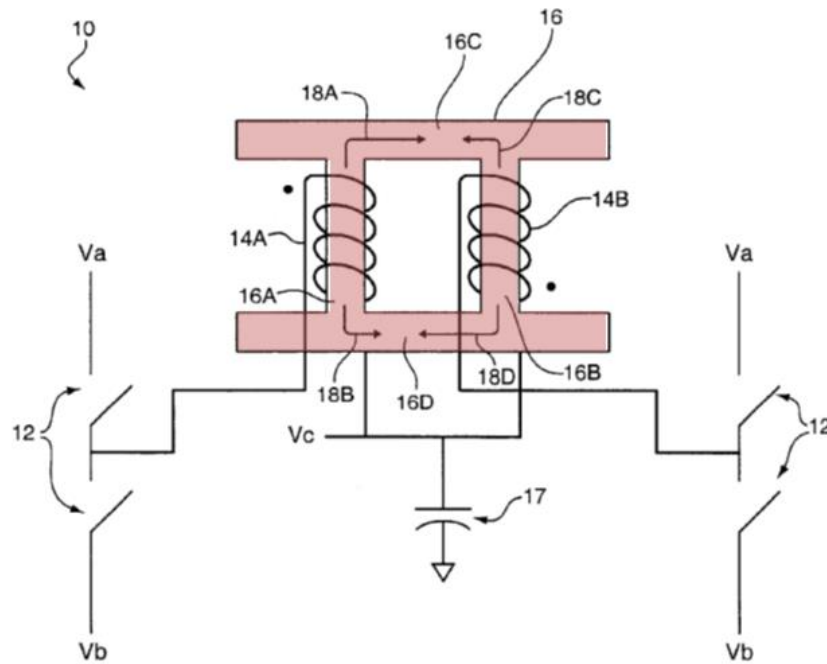
FIG. 14



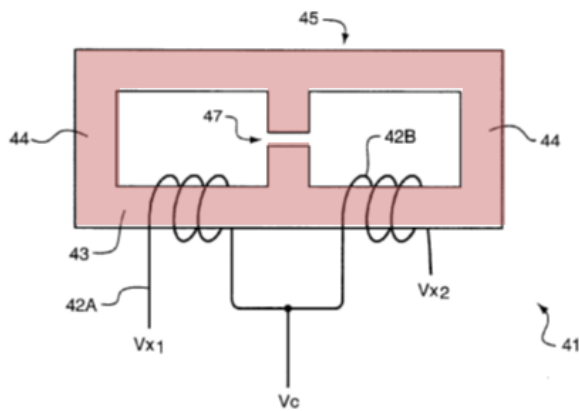
'986 Patent at Figures 8, 13, and 14 (annotations added).

Indeed, as can be seen in the annotated figures above and below, every embodiment shown and discussed in the '986 Patent corresponds to a continuous magnetic core, rather than two or more discrete cores with a gap between them.

**FIG. 1**



**FIG. 3A**



**FIG. 3B**

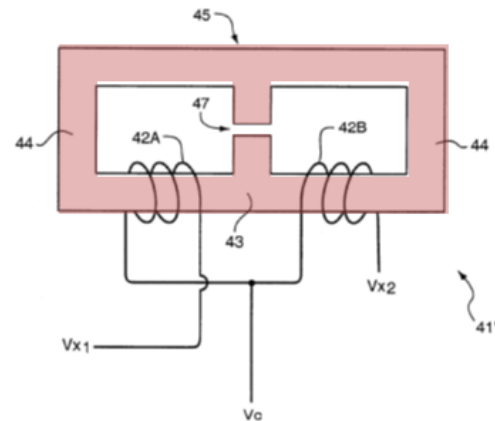


FIG. 9

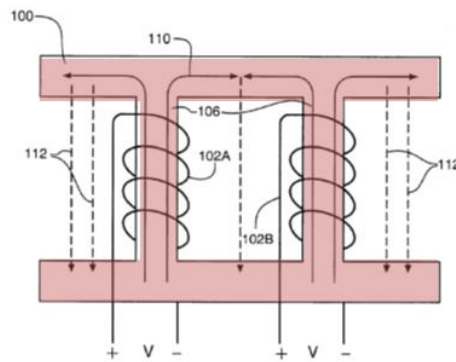


FIG. 10

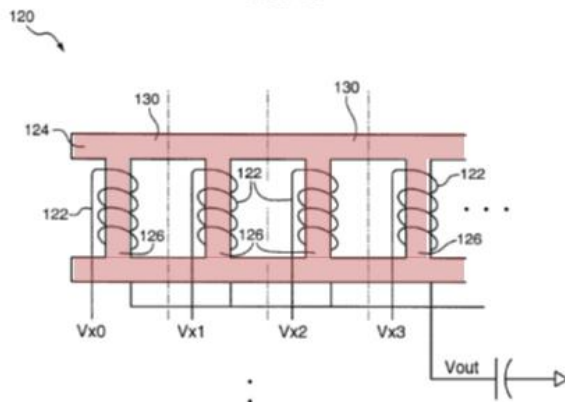
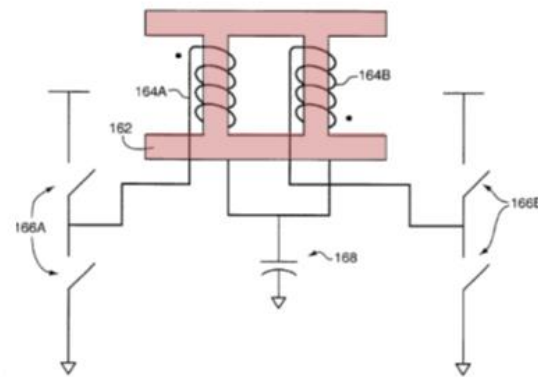


FIG. 12



'986 Patent at Figures 1, 3A, 3B, 9, 10, and 12 (annotations added).

Volterra's argument that MPS's construction would read out some of the disclosed embodiments is incorrect. For example, Volterra points to portions of the specification that explain how "another core structure supporting the invention includes a structure in the shape of two plates (disks, rectangles, or other shape) *coupled by N columns.*" Joint Brief at 33 (*citing* '986 Patent at 4:4-6). Coupling two or more plates with columns results in a continuous magnetic core, as shown

in each of the figures above. *See id.* at Figures 1, 3A, 3B, 8, 9, 10, 12, 13, and 14. Furthermore, Fig. 3A of the '986 Patent also depicts a continuous magnetic core even though there is a “gapped center leg” because the outer legs are not similarly gapped, resulting in the continuous structure illustrated above. *See id.* at 7:15-25 (“a current flow toward  $V_c$  in both [windings] leads to flux flow in opposite directions around the *main, ungapped path of the core 45*”). *See* JA-059-JA-128, IPR2020-1368, Paper 9, at JA-077-JA-079; JA-129-JA-192, IPR2020-1370, Paper 9, at JA-147-JA-149.

The '986 Patent's discussion of a prior art reference further establishes why MPS's construction is correct. *See Kumar v. Ovonic Battery Co., Inc.*, 351 F.3d 1364, 1368 (Fed. Cir. 2003) (recognizing that prior art cited in a patent constitutes intrinsic evidence). The specification attempts to distinguish over a prior art reference that describes a similar design for a DC-to-DC converter. *See* '986 Patent at 1:53-59 (citing to JA-001-JA-007, *Wong Investigating*). Unlike the continuous magnetic cores shown and discussed in the '986 Patent, the magnetic core of the DC-to-DC converter discussed in *Wong Investigating* (shown below) includes a gap that physically separates two discrete E-shaped cores (highlighted in red and blue). MPS's proposed construction should be adopted for the additional reason that it clarifies the distinction between the magnetic core disclosed in *Wong Investigating* and the magnetic core disclosed and claimed in the '986 Patent.

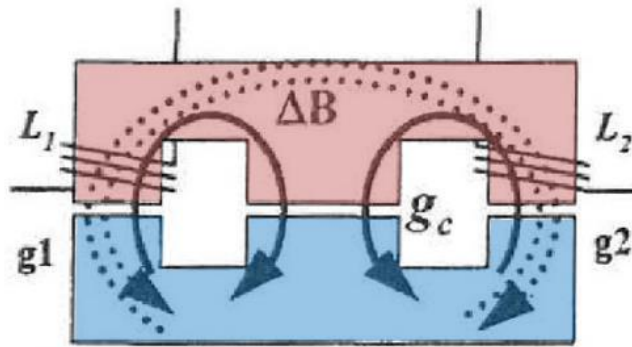


Figure 3 Core structure of the proposed integrated magnetic

JA-001-JA-007, *Wong Investigating* at Fig. 3 (annotations added).

### 3. Plaintiff's Reply Position

Again, MPS alters its proposed construction in response to Volterra's opening brief. And again, MPS fails to cure the deficiencies present in its original offering. The term "common core" should be given its plain meaning because defining it as a "continuous magnetic core" reads out embodiments and contradicts the term's known meaning at the time of the invention.

MPS's newly proposed construction still improperly excludes the embodiment of Claim 19, which MPS ignores. In its opening brief, Volterra pointed out that Claim 19 captures an embodiment where the core is multi-piece by claiming "[t]he method of claim 17, further comprising the step of forming the core with **two substantially parallel core elements**, wherein the step of orienting comprises orienting each of the windings on a **separate core element**." (*Id.* at 14:19-22); *Phillips v. AWH Corp.*, 415 F.3d 1303, 1314-15 (Fed. Cir. 2005)



(“[T]he presence of a dependent claim that adds a particular limitation gives rise to a presumption that the limitation in question is not present in the independent claim.”). MPS responds with silence, and its proposal of a “continuous” core cannot be squared with Claim 19’s requirement of each winding “on a separate core element.”

Even if MPS was correct that “every embodiment shown and discussed in the ’986 Patent corresponds to a continuous magnetic core, rather than two or more discrete cores with a gap between them,” this would be insufficient to limit the claims. The Federal Circuit has held that even where the disclosed embodiments include a feature, “[t]his is not enough . . . to limit the patentee’s clear, broader claims.” *Kara Tech. Inc. v. Stamps.com Inc.*, 582 F.3d 1341, 1347 (Fed. Cir. 2009). “The patentee is entitled to the full scope of his claims, and we will not limit him to his preferred embodiment or import a limitation from the specification into the claims.” *Id.* at 1348 (citing *Phillips*, 415 F.3d at 1323).

MPS also contradicts the known meaning of “common core” by mischaracterizing how the inventors distinguished the prior art. The specification explains that:

In a further advantage, the invention operates with a magnetic core shaped in one of multiple geometries, whereas the prior art describes only certain shapes. By way of example, Wong, Investigating requires E cores with center legs, and U.S. Pat. No. 5,204,809 discloses a doughnut shaped core. In accord with the invention, the core may take several forms, described below, and additionally can provide more

power than an E core of the same physical size, because space for a center leg is not needed. Part of the distinction between the prior art and the present invention can be better understood with reference to the intended use of the inductors. One purpose of integrating two separate inductors in the prior art was to save space on a printed circuit board. Coupling between windings on a common core was, in fact, not desired, except to decrease the number of components and overall component area. The present invention actively seeks to couple windings together on the same core.

(D.I. 134-1 at 2:45-63 (emphasis added).)<sup>9</sup> In other words, the inventors differentiated the prior art based on the “intended use of the inductors” and not the definition of “common core.” MPS’s proposed construction should thus be rejected in favor of the ordinary, known meaning of “common core.”

#### 4. Defendant’s Sur-Reply Position

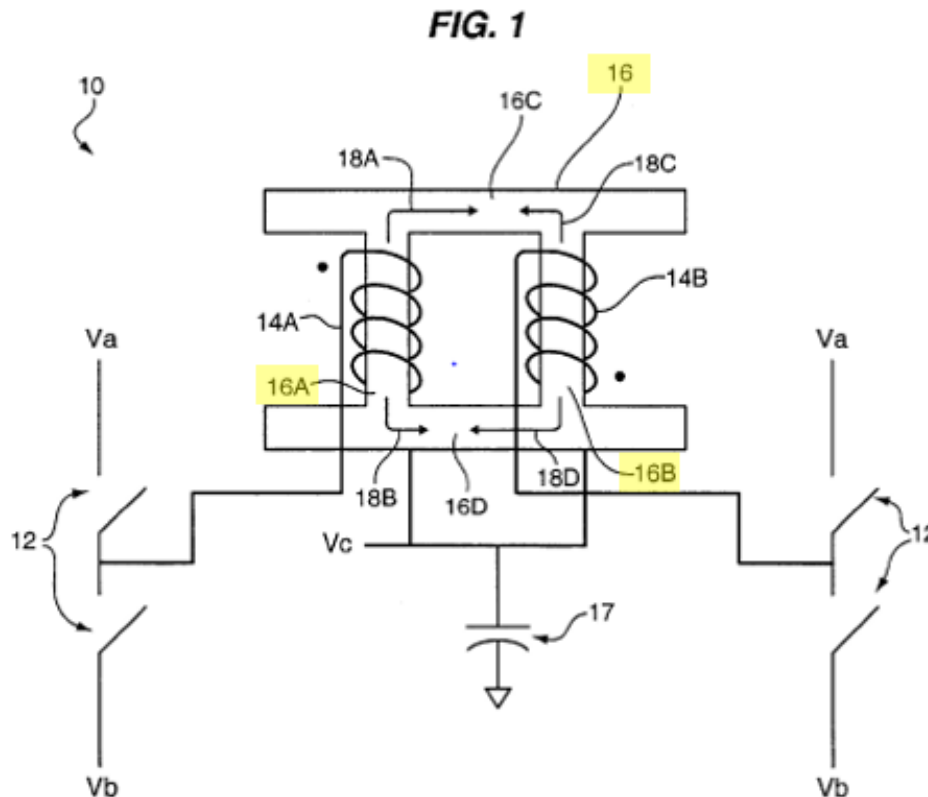
The specification makes clear that a “common” core is a *continuous* magnetic core, rather than multiple, unconnected pieces as Volterra contends.

In arguing that MPS’s construction reads out dependent claim 19, Volterra conflates the term “core element” with the term “core.” But claim 19 refers to two substantially parallel core *elements* rather than two discrete cores. Each element is just a different portion of the *same*, continuous magnetic core (*i.e.*, the “common

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<sup>9</sup> See also *id.* at 1:53-59 (“In one article, Wong, Investigating Coupling Inductors in the Interleaving QSW VRM, IEEE APEC (February 2000), slight benefit is shown in ripple reduction by coupling two windings using presently available magnetic core shapes. However, the benefit from this method is limited in that it only offers slight reduction in ripple at some duty cycles for limited amounts of coupling.”).

core”) recited in independent claim 17. For example, Figure 1 shows a continuous magnetic core 16 with “two substantially parallel core elements” (16A and 16B) where each of the windings are located “on a separate core element” (16A or 16B).



MPS’s construction does not import limitations into the claim because the full scope of “common core” *is* a “continuous magnetic core.” The claims must be read in view of the specification, not “divorced from the context of the written description and prosecution history.” *Nystrom v. TREX Co., Inc.*, 424 F.3d 1136, 1144-45 (Fed. Cir. 2005); *Phillips v. AWH Corp.*, 415 F.3d 1303, 1320-21; *see also Phillips*, 415 F.3d at 1313 (“the person of ordinary skill in the art is deemed to read the claim term

. . . in the context of the entire patent, including the specification.”). Here, the specification states that the objective is to “couple windings together on the same core,” not multiple cores. *See* ’986 at 2:62-63; 3:55-4:8; 11:1-31.

Finally, Volterra is incorrect that the specification distinguishes itself from *Wong Investigating* only through an intended use of inductors. Joint Brief at 41-42. The patentee distinguished its purported coupled inductor inventions by disparaging the “presently available *magnetic core shapes*” for coupled inductors, such as those disclosed in *Wong Investigating*, as offering only a “slight” benefit in ripple reduction. ’986 at 1:53-59. Thus, the patent’s disclosure of a continuous magnetic core for a coupled inductor was integral to the allegedly greater benefit in ripple reduction over *Wong Investigating*. *Id.*<sup>10</sup>

### C. “a [first/second] number of turns” (Claim 23 - ’986 Patent)

Volterra’s Construction	MPS’s Construction
plain meaning	“two or more turns”

#### 1. Plaintiff’s Opening Position

Claim 23 requires “a first number of turns in the first winding and a second number of turns in the second winding,” but MPS improperly narrows each

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<sup>10</sup> The inventors’ contemporaneous writings confirm this. In a 2002 article published shortly after the ’986 Patent was filed, the inventors explain that “greater ripple reduction” is achieved with continuous magnetic cores for coupled inductors relative to the prior art designs disclosed in *Wong Investigating*. JA-458-JA-465 at JA-459-JA-460.

“number” to “two or more.” Indeed, nothing in the patent prohibits a single or partial turn.

MPS will likely highlight that each figure shows two or more turns, but this is insufficient to limit the claims. The Federal Circuit has held that even where the disclosed embodiments include a feature, “[t]his is not enough . . . to limit the patentee’s clear, broader claims.” *Kara Tech. Inc. v. Stamps.com Inc.*, 582 F.3d 1341, 1347 (Fed. Cir. 2009). “The patentee is entitled to the full scope of his claims, and we will not limit him to his preferred embodiment or import a limitation from the specification into the claims.” *Id.* at 1348 (citing *Phillips*, 415 F.3d at 1323).

MPS’s proposal also contradicts the specification and dependent claim 24. The specification explains that a POSITA should “appreciate that windings with differing numbers of turns can also be included in the various phases of such systems. For example, in accord with the invention, the dc current within each phase may be altered—with the number of turns in the windings also altered—so that the product of NI is the same for each phase.” (D.I. 134-1 at 12:55-60.) Claim 24 mirrors this embodiment, which allows for the scenario where a first winding with one turn has twice as much current as a second winding with two turns. Even though each winding has a different number of turns and a different amount of current, each product of NI (*i.e.*, the number of turns multiplied by current) is

identical. MPS's proposal reads out this embodiment and therefore must be rejected.

**D. "windings"/"winding" (Claim 17, 18, 20, 21, 23 - '986 Patent)**

Volterra's Construction	MPS's Construction
plain meaning	"a conductor completing at least one full turn around a magnetic core"

**1. Plaintiff's Opening Position**

The tenet of claim differentiation precludes MPS's proposal here. Claim 17 requires "orienting, in like direction, first and second windings **about a common core,**" yet MPS construes "winding" to require "at least **one full turn around a magnetic core.**" The requirement of a turn is already introduced in dependent Claim 23, which adds "the steps of forming a first number of turns in the first winding and a second number of turns in the second winding." By introducing turns in a dependent claim, the patentee made clear that the broader independent claim contained no such requirement. *Phillips*, 415 F.3d at 1314-15 ("[T]he presence of a dependent claim that adds a particular limitation gives rise to a presumption that the limitation in question is not present in the independent claim.").

While MPS's proposals for "a [first/second] number of turns" and "windings" both improperly read out partial turns, that is where the similarities end. Indeed, substituting both proposals into Claim 23 reveals their incompatibility:

Original Claim:	23. The method of claim 17, further comprising the steps of forming a first <b>number of turns</b> in the first <b>winding</b> and a second <b>number of turns</b> in the second <b>winding</b> .
MPS's proposals:	23. The method of claim 17, further comprising the steps of forming a first <b>two or more turns</b> in the first <b>conductor completing at least one full turn</b> around a magnetic core and a second <b>two or more turns</b> in the second <b>conductor completing at least one full turn</b> around a magnetic core.

MPS's proposed constructions require each winding to complete "at least one full turn" and also "two or more turns." Neither requirement is supported by the patent, and both constructions should be rejected.

#### E. "wound about" (Claim 14 – '408 Patent)

Volterra's Construction	MPS's Construction
plain meaning	"wrapped around"

##### 1. Plaintiff's Opening Position

MPS replaces the word "about" with "around," thereby changing the meaning of the limitation. In fact, MPS's proposed construction must be rejected because it cannot be reconciled with the specification's use of "wound about" with respect to Figure 2. As the specification states: "[t]he windings 34A and 34B may also be either **wound about** the single magnetic core in the same number of turns or in a different number of turns." (D.I. 134-2 at 4:40-43 (emphasis added)). As can be seen below, the windings (34A and 34B) are not "wrapped around" magnetic core 36B because the dotted lines underneath the inductor illustrate that the windings extend down and only a little bit underneath magnetic core 36B.

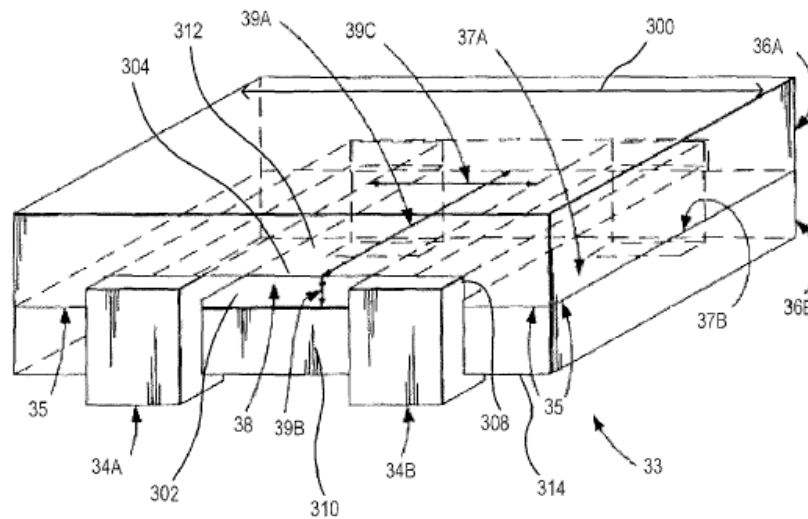


FIG. 2

In contrast, the words used consistently in the claim and in the specification—“wound about”—unmistakably describe the illustration of the windings in Figure 2: “The windings 34A, 34B may be formed of a conductive material, such as copper, that wind though and about the passageway 38 and the magnetic core 36B.” (*Id.* at 4:32-34.) The pervasive use of “wound about” in the written description, along with the numerous examples in the specification, confirms the well understood meaning and provides ample guidance as to the scope and meaning of the term. *Sonix Technology Co., Ltd. v. Publications International, Ltd.*, 844 F.3d 1370, 1377-81 (Fed. Cir. 2017) (specification examples provided sufficient objective guidance to understand the bounds of the claims).



## 2. Defendant's Answering Position

MPS's construction agrees with the specification of the '408 Patent and simplifies the meaning of "wound about" for the jury as "wrapped around." This plain English definition is consistent with how "wound about" and different variations thereof are used throughout the specification. '408 Patent at 5:24-26, 5:56-58, 7:4-13, 7:27-29, 7:53-56, 9:24-28, 11:41-12:12, Figs. 3, 4, 6-13, 17. Further, it is consistent with how it is defined in contemporaneous dictionaries. Wound about means wrapped around. JA-193-JA-198, American Heritage College Dictionary, 4th Edition (2002), JA-197 ("To wrap (something) around a center or another object once or repeatedly."); JA-199-JA-203, Merriam Webster's Collegiate Dictionary 10th edition (2001), JA-203 ("to turn completely or repeatedly about an object").

Further, Volterra's brief makes clear there is indeed a dispute as to the meaning of this term, making construction appropriate. *O2 Micro*, 521 F.3d at 1360; *see also KeyMe, LLC v. Hillman Grp., Inc.*, 2021 U.S. Dist. LEXIS 13828, \*6-7 (D. Del. Jan. 25, 2021) (rejecting "plain and ordinary" construction of "kiosk" where such construction would not resolve the parties' dispute). Volterra claims that the "pervasive use" of "wound about" in the patent makes the meaning of the term clear, but Volterra never explains what "wound about" means and its examples confuse rather than clarify. Joint Brief at 47-48.

For example, Volterra is incorrect that “wrapped around” is inconsistent with the illustration in Figure 2. *Id.* As Volterra itself admits, the conductors in Figure 2 do in fact extend to the bottom side of the magnetic core, wrapping at least partially around the core. This is illustrated below; the conductor (highlighted in blue) is wrapped around the bottom portion of the core (highlighted in pink)—the ends extend underneath the bottom portion of the core and wrap at least partially around it. Volterra has not explained how the windings are “wound about” the magnetic core, but not “wrapped around” them.

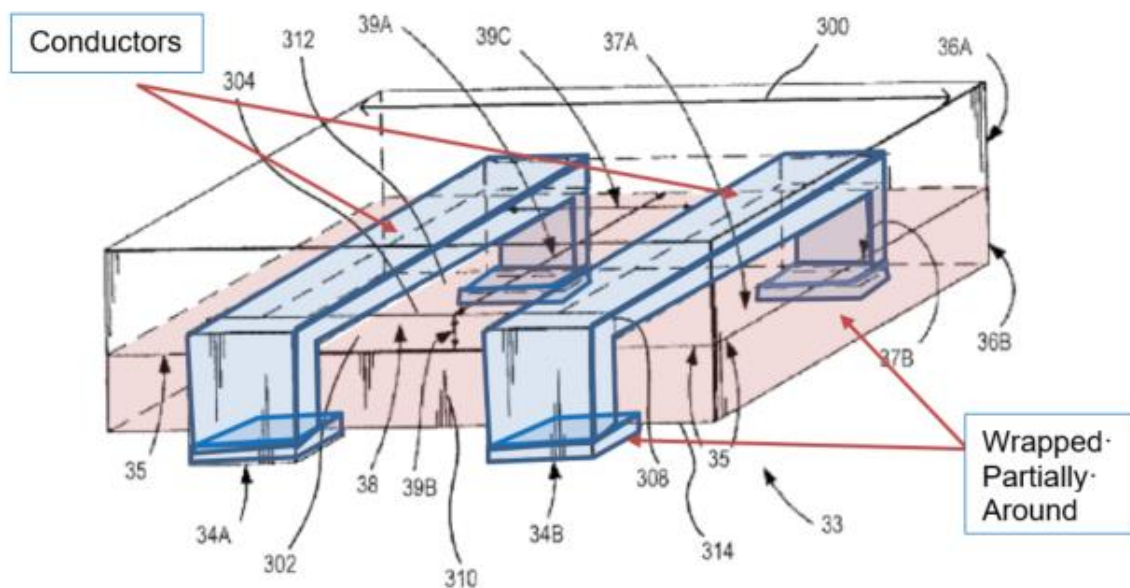


FIG. 2

'408 Patent at Fig. 2 (annotations added).

Volterra also confusingly argues that “wrapped around” is an inappropriate construction because the conductors in this embodiment “extend down and only a little bit underneath magnetic core 36B,” as if this embodiment prohibits the conductors from further extending underneath the magnetic core. Joint Brief at 47-48. Volterra’s argument is inconsistent with the ’408 Patent’s claims and file history. The applicant knew how to claim an embodiment where the conductor is only partially wound about the core (like the one shown above in Fig. 2 above); indeed the ’408 Patent’s claims recite “at least partially wound about.” ’408 Patent at 12:41, 12:44, 13:21, 13:24.

Further, construing this term is necessary because Volterra has taken inconsistent positions. In the IPR proceedings, Volterra argued extensively that if a conductor was not “wound *around*” a core element, it is not “wound about” as claimed. JA-204-JA-281, IPR2020-1348, Paper 8, Patent Owner’s Preliminary Response at JA-258-JA-260 (“[W]hen a winding is shown wound around a leg of an E-I core, that winding is expressly **not** considered to be ‘wound about’ the upper and lower beams.”) (emphasis original), *see also id.*, JA-240-JA-242, JA-246-JA-247, JA-266, JA-272-JA-274 (describing a broader interpretation of “wound about” that did not require wrapping as “ridiculously improperly broad”). Volterra cannot now argue that “wound about” the core means anything less than to be wrapped around the core; Volterra disclaimed the broad construction it

appears to advocate now. *Aylus Networks, Inc. v. Apple Inc.*, 856 F.3d 1353, 1359-62 (Fed. Cir. 2017) (Statements made by a patent owner during an IPR proceeding can be relied on to support a finding of prosecution disclaimer during claim construction).

### **3. Plaintiff's Reply Position**

MPS cites to no intrinsic evidence to support its construction. Instead, MPS begins by introducing *extrinsic* evidence of only half of the term. (Joint Brief at 49.) In other words, MPS ignores the patent specification, prosecution history, cited references, and all other intrinsic evidence, in favor of two college dictionaries (MPS even ignores technical or electrical engineering dictionaries). And to compound this error, MPS relies on the definition of “wound” as a standalone word, while completely ignoring the word “about” that is part and parcel of the disputed term. (*Id.*)

MPS's dictionary argument must be rejected because it contradicts the intrinsic record. In Figure 2, the “windings” are identified by labels 34A and 34B. (D.I. 134-2 at 4:40-43 (“[t]he windings 34A and 34B may also be either wound about the single magnetic core in the same number of turns or in a different number of turns.”).) The figure identifies the windings and then illustrates that the windings do not completely “wrap around” the magnetic core. (*Id.* at FIG. 2.) As

shown in the upper portion of the figure, the windings extend underneath the magnetic core—but only partially:

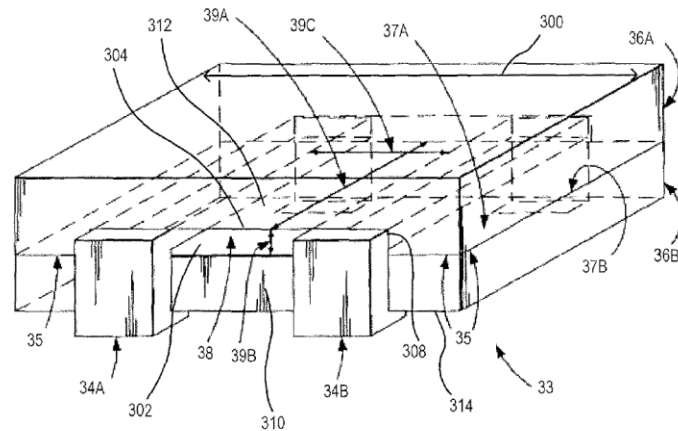


FIG. 2

The relationship between the “windings” and “wound about” is explicit—the “windings” are “wound about” the magnetic core. (*Id.* at 4:40-43.) If Volterra was bound by MPS’s chosen dictionaries, then 34A and 34B of Figure 2 could not be “windings,” since 34A and 34B do not completely wrap around the magnetic core. By identifying 34A and 34B as “windings,” and depicting such “windings” as extending only partially under the magnetic core, the patent specification demonstrates that “wound about” cannot mean that the winding has to be completely “wrapped around” the magnetic core.

MPS’s turns itself upside down trying to harmonize the existence of Figure 2 with its proposed construction. MPS starts its construction by quoting a dictionary

definition “to turn completely or repeatedly about an object” and then says that Figure 2 also meets its construction because the windings there “wrap at least *partially* around the core.” (Joint Brief at 49-51.) To “turn completely or repeatedly” (MPS’s dictionary) and to “wrap partially” (Figure 2) are entirely different, confirming that MPS cannot reconcile its dictionary definitions with the intrinsic record.

MPS cites *O2 Micro Intern. Ltd. v. Beyond Innovation Tech. Co., Ltd.*, 521 F.3d 1351, 1360 (Fed. Cir. 2008) for the proposition that the presence of a dispute between the parties requires the Court to enter some kind of affirmative construction as opposed to plain meaning. But *O2 Micro* does not extend that far—it is triggered only when “a term has more than one “ordinary” meaning or when reliance on a term’s “ordinary” meaning does not resolve the parties’ dispute.” 521 F.3d 1361.

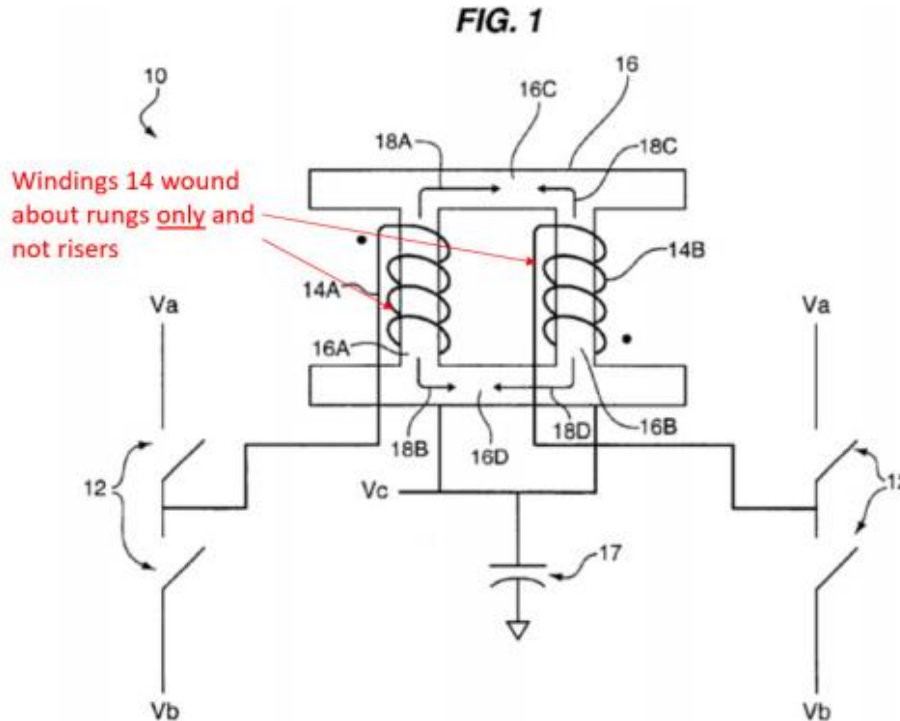
Here, MPS has not shown that adopting the ordinary meaning would fail to resolve the parties’ dispute. Rather, the competing constructions are: (1) ordinary meaning—which encompasses windings that wind completely around the core and those that do not; or, (2) a specific, narrowing, definition proposed by MPS that requires the windings to be “wrapped around” the core. Adopting one of those competing positions fully resolves the dispute between the parties.

MPS’s assertion that Volterra has taken inconsistent positions in the IPR proceedings is mistaken. (Joint Brief at 51-52.) MPS recasts the argument Volterra made in the IPR to try to make it sound like Volterra was arguing that a winding “wound around” something is equivalent to the recited claim language of a winding “wound about” something. But even the quote MPS pulled from Volterra’s IPR brief shows this is not the case. In the IPR, Volterra argued that prior art depicting a winding wound around a *leg* of a core does not satisfy claim language requiring a winding wound about *the upper and lower beams*: “when a winding is shown wound around a *leg* of an E-I core, that winding is expressly not considered to be ‘wound about’ the *upper and lower beams*.” (*Id.*) In fact, the text in Volterra’s IPR brief preceding the statement quoted by MPS could not have been clearer in reciting that the distinction with the prior art arose from *what* the winding was wound about not any difference between “about” and “around”:

In describing the depicted windings, Schultz could not be more clear that the windings are wound about respective legs and not the upper and lower beams—explaining that “[w]ith ladder type multiple winding (N>2) magnetic structures, as in FIG. 10, windings should be with the ladder rungs, and not on the ladder risers 130.” EX1011, 11:26-31.

As another example of this teaching with respect to Schultz’s express understanding of the term “wound about,” in describing a similar two-phase ladder core arrangement depicted in FIG. 1, Schultz specifies that “core 16 can be considered as two ‘rungs’ 16A, 16B, and two ‘risers’ 16C, 16D forming the square core shape. Windings 14A, 14B are thus wound about rungs 16A, 16B, respectively.” EX1011, 5:8-13. As indicated by this description of Schultz and shown in FIG.

1, the windings are wound about the rungs and **not** the upper and lower risers:

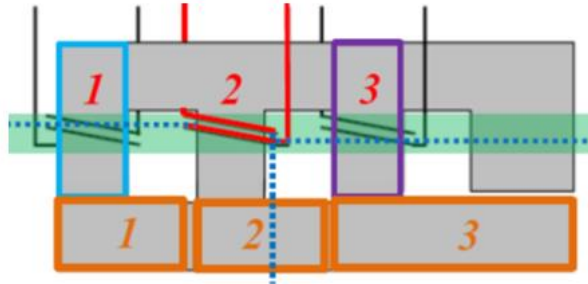


(JA-204-JA-281 to MPS’s Resp., IPR2020-1348, Paper 8, Patent Owner’s Preliminary Response at JA-259-JA-260 (emphasis in original).)

MPS also inaccurately asserts that Volterra argued in its IPR brief that a broader interpretation of “wound about” that did not require wrapping would be “ridiculously improperly broad.” Once again, the actual statement in the Volterra IPR brief had nothing to do with a difference between “around” and “about”—instead it again dealt with exactly what structure the winding was touching. More specifically, the brief addressed an assertion by MPS in its IPR Petition that the red



winding in the illustration below was wound about blue block 1 and purple block 3:



In addressing that assertion, Volterra unsurprisingly stated that:

MPS’s assertion that the identified middle winding (labeled with the red ‘2’) is somehow “wound about” both of the identified first and second magnetic elements requires adopting a ridiculously improperly broad interpretation of the term “wound about.”

(*Id.* at JA-272.) The usage of “around” as opposed to “about” was thus irrelevant to the distinction being made, which was between a winding about a leg versus a winding about an upper and lower beam.

For the reasons above, MPS’s narrowing construction of “wrapped around” should be rejected in favor of the plain meaning.

#### **4. Defendant’s Sur-Reply Position**

The parties dispute whether wound about 1) “encompasses windings that wind completely around the core and those that do not [i.e., those partially wrapped around],” Volterra’s “ordinary meaning” (Joint Brief at 54) or 2) requires the winding to be “wrapped around” the core element, not just partially wrapped

around, MPS's construction.<sup>11</sup> As the patentee knew how to claim partially wrapped around embodiments, using the language "at least partially wound about," MPS's construction is correct. Joint Brief at 51 (citing '408 at 12:41, 12:44, 13:21, 13:24.) (emphasis added).

The specification shows windings wrapped around core elements, either fully for "wound about" or partially for "partially wound about." *Id.* at 49-52. Volterra contends Figure 2 shows a winding that is not wrapped around the core. Joint Brief at 52-53. But MPS already explained it shows windings partially wrapped around the core:

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<sup>11</sup> Contrary to Volterra's claim, MPS includes **numerous** citations to the intrinsic record. *Compare* Joint Brief at 52 *with* Joint Brief at 49-52 (citing '408 at 5:24-26, 5:56-58, 7:4-13, 7:27-29, 7:53-56, 9:24-28, 11:41-12:12, 12:41, 12:44, 13:21, 13:24, Figs. 2- 4, 6-13, 17; JA-204-JA-281 at JA-240-JA-242, JA-246-JA-247, JA-258-260, JA-266, JA-272-JA-274).

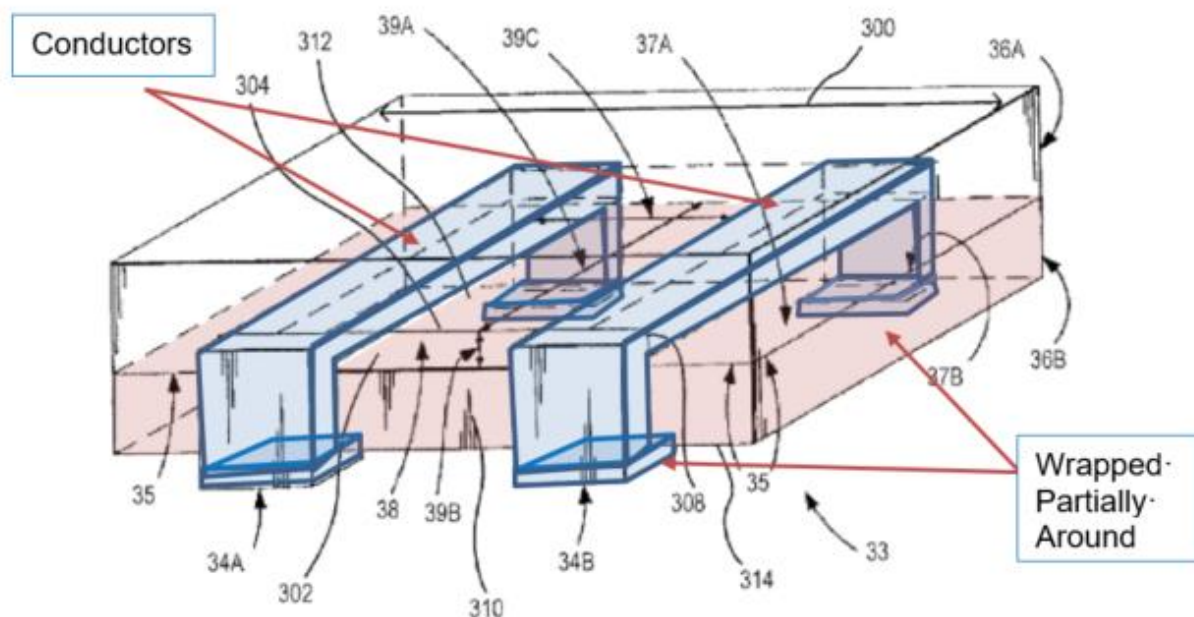
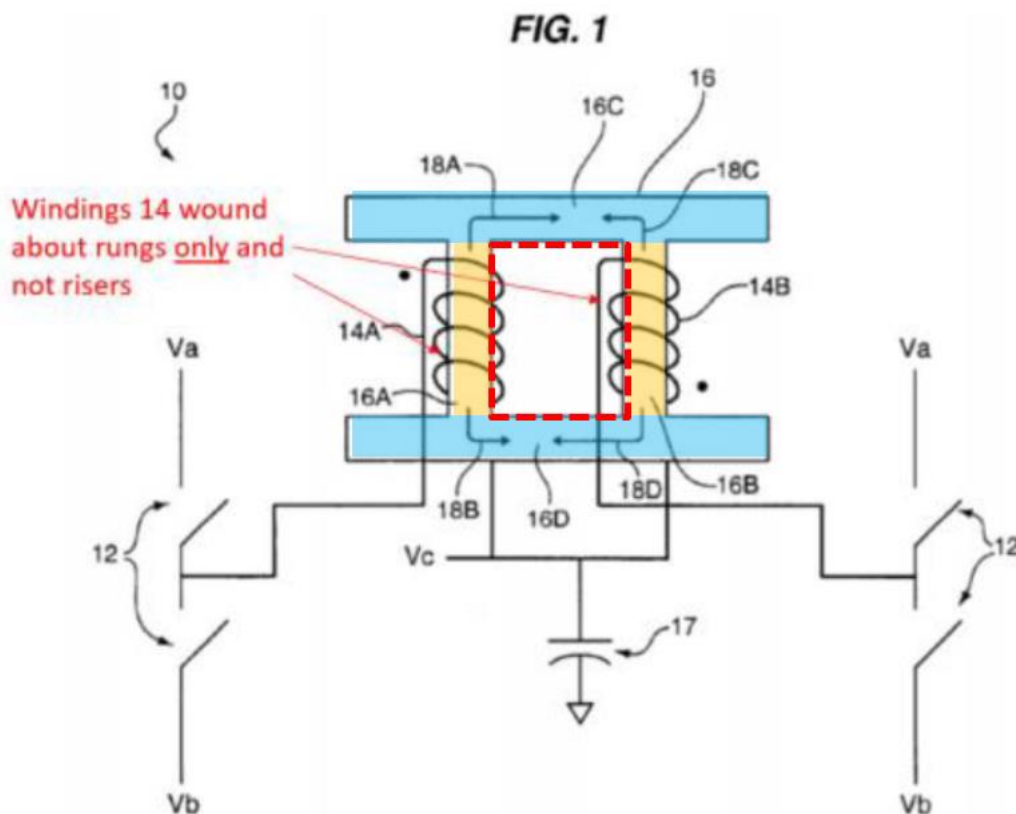


FIG. 2

'408 at Fig. 2 (annotations added).

Further, the specification states the windings can include “the same *or a different* number of turns,” i.e. more than one. *Id.* at 4:40-43 (emphasis added). If the number of turns are different, the windings necessarily must wrap around the core *more than once*, i.e not partially. The patentee claimed both embodiments separately, using “wound about” in claim 14, and using the broader “at least *partially* wound about” in the unasserted claims. Joint Brief at 51 (*citing* ’408 at 12:41, 12:44, 13:21, 13:24.) (emphasis added). Volterra failed to address this distinction.

Indeed, Volterra's IPR statements (intrinsic evidence) show a winding must be wrapped around a core element to be wound about it. There, Volterra explained that if a winding is wrapped around one sub-element of a core (a "rung", orange), but not a second sub-element of the same core (a "riser", blue), it is only wound about the sub-element it is wrapped around. Joint Brief at 55-57.



*Id.* at 56 (annotations partially added).

This is the issue in claim 14, which recites “each winding being wound about *a respective connecting element*,” a sub-element of the claimed core. ’408 at

14:17-18. The windings must be wrapped around the connecting elements, not other core elements, to infringe.

**F. “a magnetic core including ... N-1 passageways” (Claim 14 – ‘408 Patent)**

Volterra’s Construction	MPS’s Construction
plain meaning	“N-1 passageways within a single magnetic core, rather than two magnetic core elements separated by a gap”

**1. Plaintiff’s Opening Position**

MPS’s construction of this term suffers from the same deficiencies identified with regard to MPS’s “common core” construction, namely, reading out disclosed embodiments and attempting to improperly limit the scope of the claims. In construing this term, MPS introduces two related but unsupported limitations—first, that the core be “single” and, second, that the core *not* be comprised of “two magnetic core elements separated by a gap.” However, both limitations stand inapposite to disclosed embodiments in the specification.

MPS’s insertion of the word “single” appears to be an attempt to exclude multiple cores used together to form a magnetic core. However, the specification specifically discloses such a cooperative arrangement. (D.I. 134-2 at 4:23-25 (“When the two magnetic cores 36A and 36B are coupled together, they cooperatively form a single magnetic core for use as a two-phase coupled inductor 33”); 5:30-32 (“Other single magnetic core embodiments shown herein may also

be formed by cooperatively combining multiple magnetic cores . . . ”); *See also*, *e.g.*, FIG. 2. Only one embodiment explicitly discloses the use of a single magnetic core that does not comprise multiple magnetic cores, while several other embodiments disclose the use of multiple cores arranged cooperatively to form a magnetic core. *Compare* D.I. 134-2, FIG. 3 *with* FIGs. 6-9. In particular, claim 14 contemplates cores that include “passageways,” and the embodiments that disclose multiple passageways also disclose multiple magnetic cores cooperatively combined. (*Id.*, FIGS. 6-8, 10, and 15-17.)

MPS’s exclusion of “two magnetic core elements separated by a gap” stands in stark contrast to the embodiment of FIG. 2 and its accompanying description.

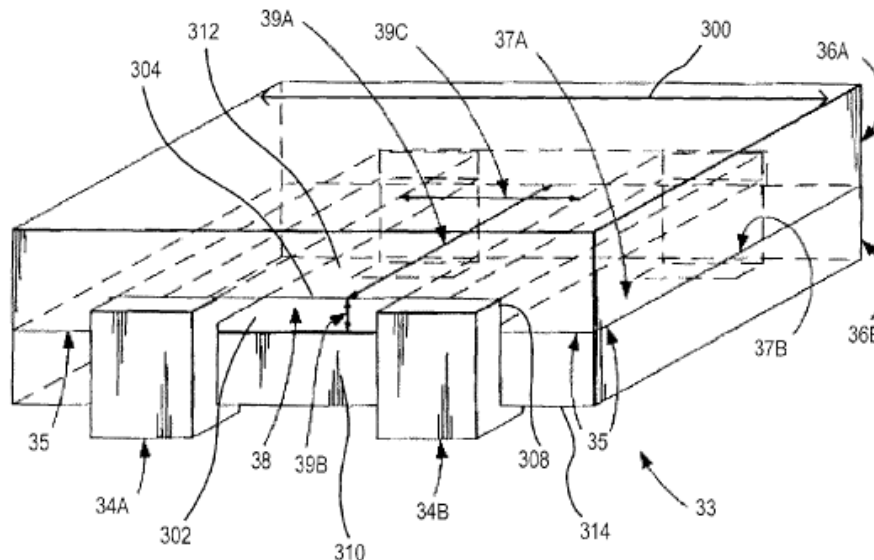


FIG. 2

In FIG. 2, element 36A is identified as a “first magnetic core” while element 36B is identified as a “second magnetic core.” (D.I. 134-2 at 4:17-19.) The description of FIG. 2 goes on to state that 36A and 36B “cooperatively form a single magnetic core.” Since MPS’s construction would read out this embodiment, it must be rejected.

Since both “single” and “two magnetic core elements separated by a gap” would contravene established law by limiting the claim scope, the court should reject MPS’s construction and adopt the plain and ordinary meaning of the term.

## **2. Defendant’s Answering Position**

The Court should adopt MPS’s proposed construction because Volterra disclaimed any potential scope of the term that could include “two magnetic core elements separated by a gap” during prosecution. MPS’s construction for this term (and for the equivalent “[a/the] magnetic core forming a passageway” term in the ’955 Patent discussed below) comes from the applicants themselves. Specifically, the examiner asked the applicants to explain the difference between a “passageway” and a “gap.” The applicants responded that “the magnetic core forming at least one passageway” means “a passageway within a single magnetic core,” rather than “two magnetic core elements separated by gap.” JA-008-JA-038 7,352,269 Patent Prosecution History, Response to Office Action (September 14, 2005) at JA-030-JA-031. The difference between these two, separate embodiments

can be seen by comparing “the magnetic core forming at least one passageway” embodiment shown in Figure 2 (with the core plate highlighted in pink, showing it is a single, continuous core), with the “gap” embodiment shown in Figure 5 (with the two, separate core pieces highlighted in purple):

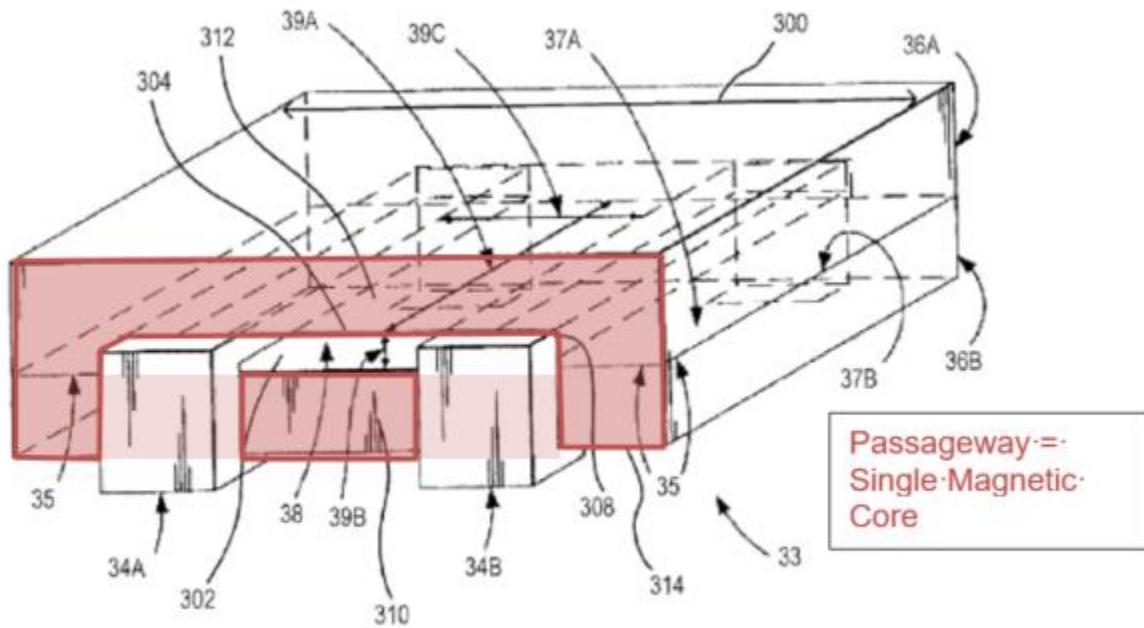
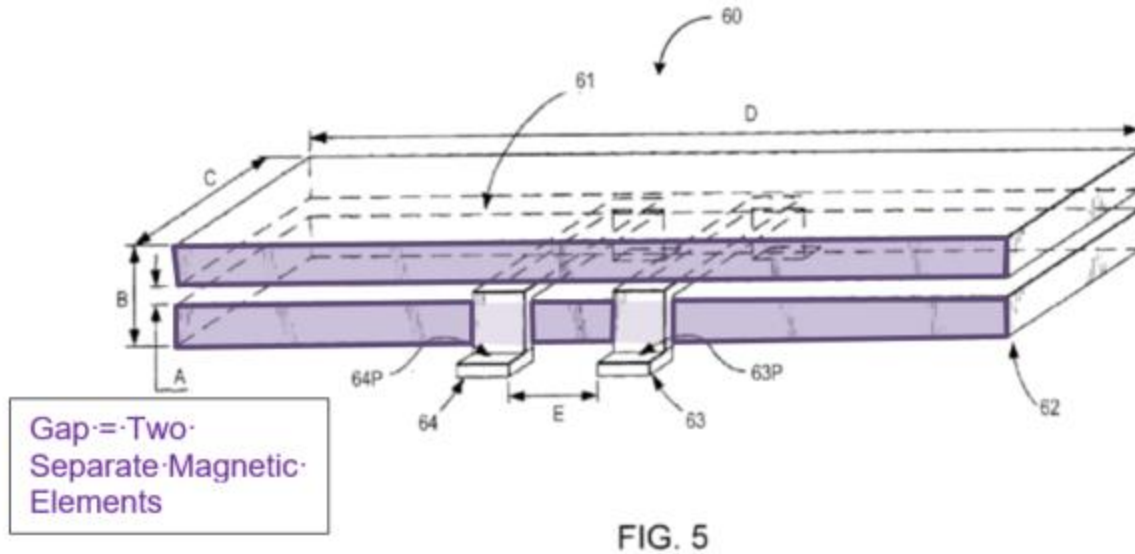


FIG. 2





'408 Patent at Figs. 2, 5 (annotations added).

Express limitations in the prosecution history, like this one, can be “critical interpreting disputed claim terms.” *Sunovion*, 731 F.3d at 1276. Accordingly , “[t]he doctrine of prosecution disclaimer is well established in Supreme Court precedent, precluding patentees from recapturing through claim interpretation specific meanings disclaimed during prosecution.” *Omega Eng'g*, 334 F.3d at 1323 (internal citations omitted). Here, the applicant disclaimed any interpretation including a gap.

Both the '408 and the '955 Patents are divisions of the same parent patent, U.S. Patent No. 7,352,269. During the prosecution for this common parent, the examiner asked the applicants to explain whether a “gap” structure and a “passageway” structure were the same. JA-008-JA-038, 7,352,269 Patent

Prosecution History, Response to Office Action (September 14, 2005) at JA-030-

JA-031. The applicants responded:

Regarding claim 39, the Examiner poses the question “Does this ‘gap’ structure the same with the ‘passageway’ structure in claim 36?” The language of these claims makes it clear that **the “gap” recited in claim 39 is not the “passageway” of claim 36. Claim 36 requires “a magnetic core” and “the magnetic core forming at least one passageway.”** Claim 39 requires “the magnetic core comprises: a first magnetic core element; and a second magnetic core element separated from the first magnetic core element to form a gap.” **Therefore claim 36 recites a passageway within a single magnetic core, while claim 39 requires two magnetic core elements separated by a gap.** Gaps between magnetic cores, (e.g. corresponding to the language of claim 39) are found in the specification, for example at paragraph [0037] (discussing FIG. 5) and paragraph [0054] (discussing FIG. 14).

*Id.* (bold added, underline original). Thus, by using “passageway” in “*a magnetic core*” and “gap” as alternatives, the applicants defined both terms and disclaimed using them as synonyms in the context of describing the claimed magnetic core.

*See SkinMedica*, 727 F.3d at 1200.

The applicants further distinguished “passageways” from “gaps” by citing the embodiments in Figures 5 and 14 as disclosing the gap structure, and *not* the passageway structure. The difference between these two is shown in the above comparison, repeated here for clarity:

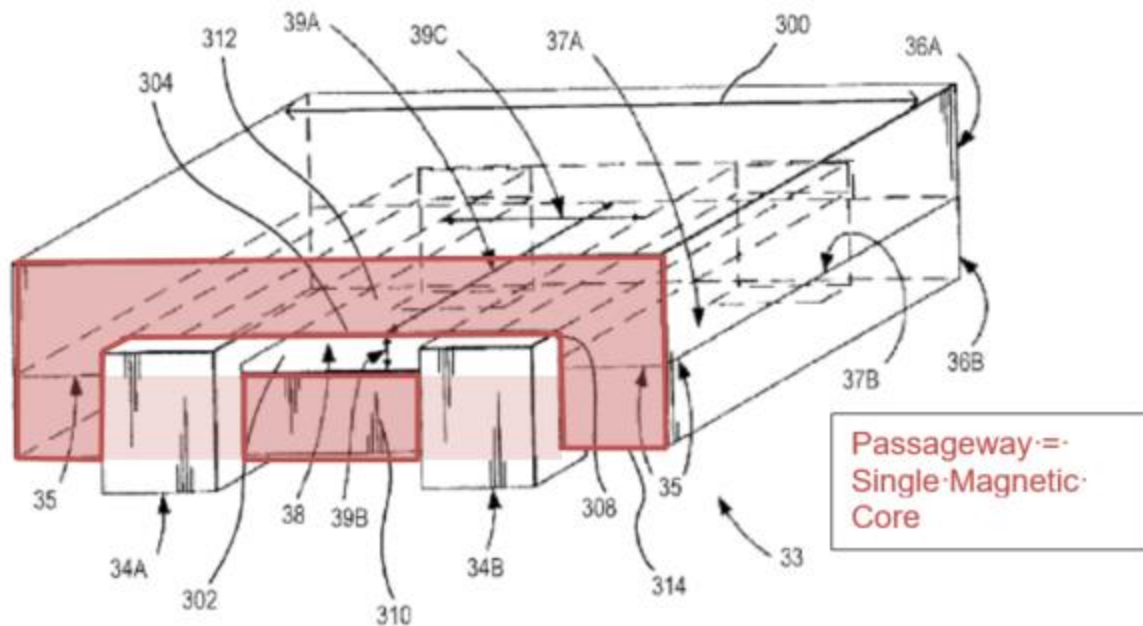


FIG. 2

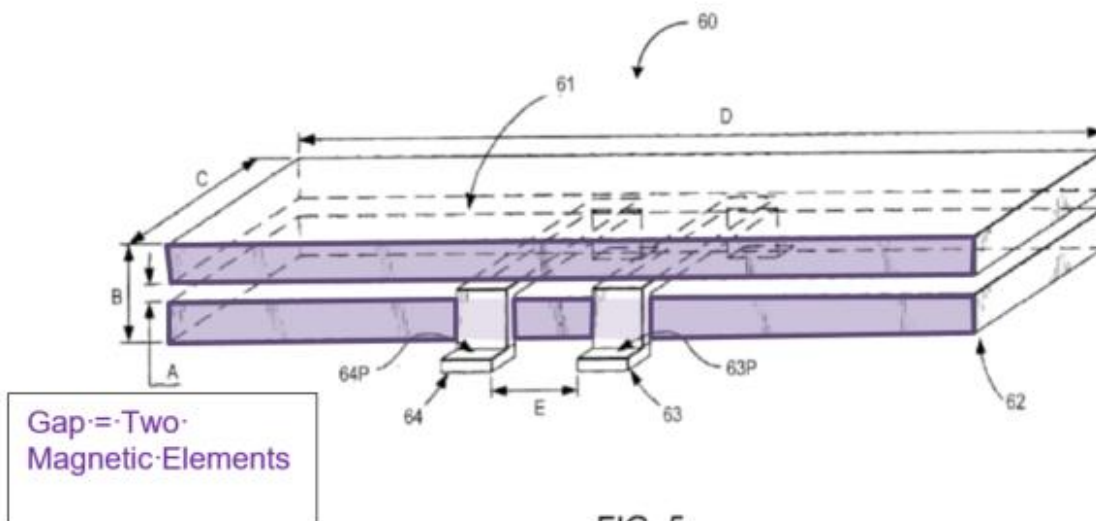


FIG. 5

'408 Patent at Figs. 2, 5 (annotations added). Thus, the applicants clearly and unambiguously defined “a magnetic core forming at least one passageway” as “a

passageway within a single magnetic core,” disavowing a construction of “passageway” including “two magnetic core elements separated by a gap.”

Although the applicant *did* disavow any potential claim scope including a gap, this Court need not find express disavowal or explicit lexicography here to construe the claim. *See Vitronics*, 90 F.3d at 1582 (explaining that terms can be defined “by implication.”). Even where “prosecution history statements do not rise to the level of unmistakable disavowal, they do inform the claim construction.” *Shire Dev., LLC v. Watson Pharm., Inc.*, 787 F.3d 1359, 1366 (Fed. Cir. 2015). And here, the applicant’s statements illuminate why the specification supports MPS’s construction.

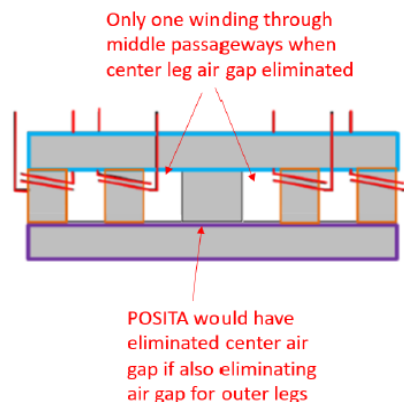
The applicants’ explanations of “passageways” and “gaps” during prosecution are consistent with the specification, and the distinction between the two is likewise consistent with the plain meaning of “*a* magnetic core.” Where the specification describes a “passageway” in “[a/the] magnetic core,” the specification and figures show the core is a single piece or continuous element with no “gap” separating magnetic elements from each other. *See, e.g.*, ’408 Patent, 4:15-54, 4:65-67, Fig. 2. Volterra’s reliance on Figure 2 to show a “gap” is misplaced. Not only does the description specifically say “the two magnetic cores...cooperatively form a *single* magnetic core” (4:23-25), the specification goes on to say there is *no gap* shown in Figure 2 (4:49-50).

Indeed, regardless of how many pieces of magnetic cores are used to build the claimed structure, so long as the structure results in a continuous element the result is a *single* magnetic core with no gaps between the constituent magnetic cores. In contrast, the specification describes how the embodiment could be *modified* to use a gap as “illustratively discussed” in Figure 5—the same embodiment the applicants explain shows the different “gap” structure, rather than “a/the magnetic core forming at least one passageway.” *Compare* JA-008-JA-0038, 7,352,269 Patent Prosecution History, Response to Office Action (September 14, 2005) at JA-030-JA-031; *with* ’408 Patent, 4:49-54.

This is consistent with the specification of the ’408 and ’955 Patents, which contemplate connecting pieces of core together to make a single or continuous core. ’408 Patent, 4:23-25, Fig. 2, 9:54-58, Fig. 12. When asked what this term meant, the applicants were clear this claim language requires the core (once constructed) be one complete piece of continuous magnetic material, rather than two distinct pieces of magnetic material separated by a gap. JA-008-JA-038, 7,352,269 Patent Prosecution History, Response to Office Action (September 14, 2005) at JA-030-JA-031.

Finally, a construction of “a magnetic core including...N-1 passageways” which allows a gap between the outer legs is inconsistent with the position Volterra took in the ’408 Patent IPR. *Aylus*, 856 F.3d at 1359-62. There, Volterra argued

that “a POSITA would not have modified [the prior art] to eliminate the air gaps in the outer legs.” JA-204-JA-281, IPR2020-1348, Paper 8, Patent Owner’s Preliminary Response at JA-276. This is because Volterra argued by implication that for the piece of prior art to be relevant, the air gaps in the outer legs would have to be eliminated, but the center air gap would need to remain. *Id.* at JA-274-JA-276. Eliminating the air gaps in the outer legs of the prior art would have made the core one piece, as seen in the annotated image from Volterra’s IPR preliminary response:



*Id.* at JA-276 (annotations original). If none of these air gaps were eliminated, the prior art would have shown “two magnetic core elements separated by a gap,” but Volterra contended that did not invalidate the claim. This is because “two magnetic core elements separated by a gap” is not within the correct scope of this claim term. As the applicants explained, “[a/]the magnetic core forming at least one passageway” describes the use of a single core, while a “gap” exists between a

two-piece core; Volterra cannot now propagate a conflicting position here that ignores the applicants' clear distinction between "passageways" and "gaps."

### 3. Plaintiff's Reply Position

MPS's proposed construction requires there to be no gap between two magnetic core elements, but such a construction is contrary to the express teachings of the specification. MPS attempts to address this contradiction by asserting that "the specification goes on to say there is no gap **shown** in Figure 2 (4:49-50)." (Joint Brief at 68 (emphasis added).) MPS's word choice is curious at best—the figure does not "show" a gap but the specification expressly says such a gap may still exist: "[t]hose skilled in the art should appreciate that a gap (not shown) **may exist** between magnetic cores 36A, 36B." (D.I. 134-2 at 4:49-50 (emphasis added).) Thus, the specification specifically acknowledges the existence of a gap.

MPS incorrectly attempts to depict a "passageway" and a "gap" as mutually exclusive. Specifically, MPS states that Volterra differentiated a "passageway" from a "gap" by disclaiming "two magnetic core elements separated by a gap." (Joint Brief at 63.) Volterra did no such thing. Rather, in response to the Examiner's inquiry, Volterra appropriately identified what was the passageway, *and* what was the gap. (JA-008-JA-038 to MPS's Resp., 7,352,269 Patent

Prosecution History, Response to Office Action (September 14, 2005) at JA-030-JA-031.)

Indeed, even in the portion cited by MPS, Volterra was discussing claim 39, which depends from claim 36. (JA-008-JA-038, 7,352,269 Patent Prosecution History at JA-030-JA-031.) Claim 36 recites a passageway, and claim 39 recites a gap as an additional element to the claim that already required a passageway. (*Id.* at 6 (cl. 36, 39).) Thus, a gap and a passageway cannot be mutually exclusive—claim 39 requires *both* a gap and a passageway. Thus, they can exist in the same embodiment.

MPS also misrepresents Figure 2 and Figure 5 in an attempt to support its construction. MPS differentiates these figures as two different embodiments, one depicting a passageway, and the other depicting a gap. (Joint Brief at 63-65.) However, the accompanying descriptions of both figures acknowledge the existence of a passageway **and** a gap. (D.I. 134-2 FIGS. 2 and 5, *see id.* at 6:59-61.) In Figure 5, there exists a gap between upper and lower magnetic core elements, which spans the length of the magnetic core elements—colored in blue below. (*See id.* at Dimension A, FIG. 5.) There is also a passageway, the dimensions of which are defined by “dimension A” (the gap) and “dimension E” (distance between windings)—colored in red below. (*Id.* at 6:59-61 (“Dimensions E, A between windings 63, 64 may define a passageway through inductor 60.”).)



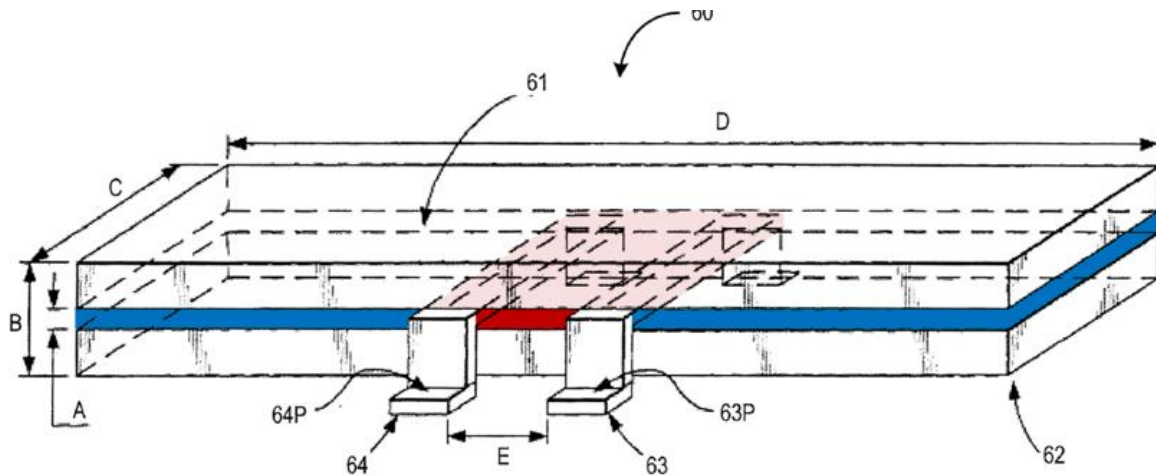


FIG. 5

In the embodiment depicted by Figure 2, there may also exist a gap and a passageway. The patentee explicitly stated that, although not shown, a gap “may exist.” (*Id.* at 4:49-51 (“[t]hose skilled in the art should appreciate that a gap (not shown) may exist between magnetic cores 36A, 36B.”).) Figure 2 also depicts a passageway, colored in red, the dimensions of which are defined not by the dimension of the gap, but rather by the opening formed by coupling two magnetic cores. (*Id.* at 4:29-31 (“[a]s the two magnetic cores 36A, 36B are coupled together, they form a passageway 38 through which windings 34A, 34B are wound.”).)

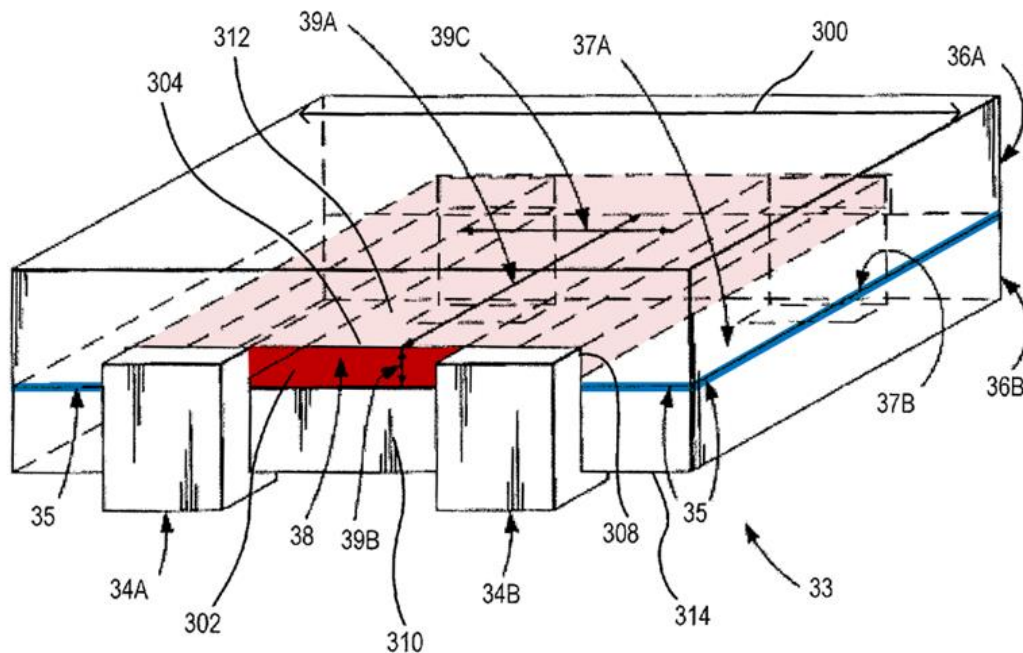


FIG. 2

Thus, the gap (colored in blue above) and the passageway (colored in red) are two related but different aspects of the claimed structure. And, both exist in the same embodiments.

Finally, MPS's argument about the IPR petition is also wrong. (Joint Brief at 69-71.) MPS had relied upon prior art which included identical sized gaps in the center leg and outer legs but argued that a POSITA would have modified those structures to reduce the gap in the outer legs while preserving the gap in the center leg. (JA-204-JA-281., IPR2020-1348, Paper 8, Patent Owner's Preliminary Response at JA-274-JA-275.) Volterra disputed that a POSITA would have been so motivated. (*Id.*) But contrary to MPS's assertion in its answering brief,

Volterra never argued that the prior art would constitute “two magnetic core elements separated by a gap.” (Joint Brief at 69-71.) In fact, that assertion never appears in Volterra’s IPR brief and MPS offers no cite to Volterra’s brief for it either. (*Id.*)

#### 4. Defendant’s Sur-Reply Position

Volterra focuses only on the “passageway,” but the actual claim term being construed is “a magnetic core including...N-1 passageways” and “[a/the **magnetic core** forming a passageway.” As Figure 2 shows, a continuous magnetic core (dashed red) defines the space of the passageway (blue), containing the windings within it:

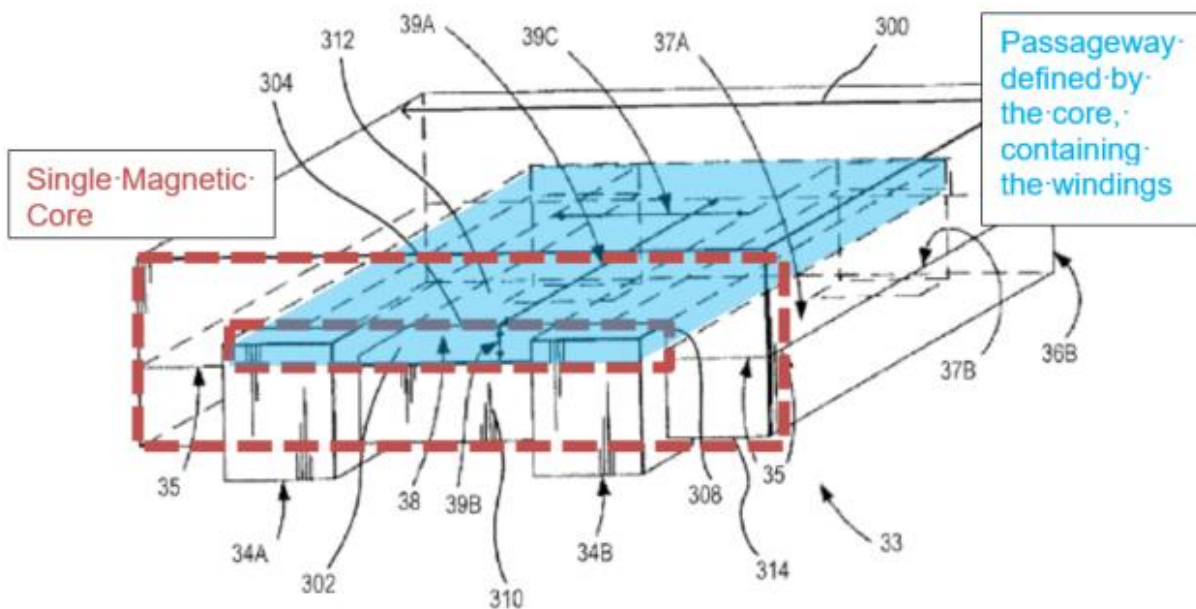


FIG. 2

'408 at Fig. 2 (annotations added).

Volterra's reliance on Figure 5 is misplaced. The applicant explained Fig. 5 shows the unclaimed two core "gap" structure, not a single magnetic core structure. JA-008-JA-0038 at JA-030-JA-031. As the specification explains, "FIG. 5 shows a two-phase coupled inductor 60" where "[t]he inductor 60 may be formed from *first and second magnetic cores 61 and 62.*" '408 Patent at 6:20-23.

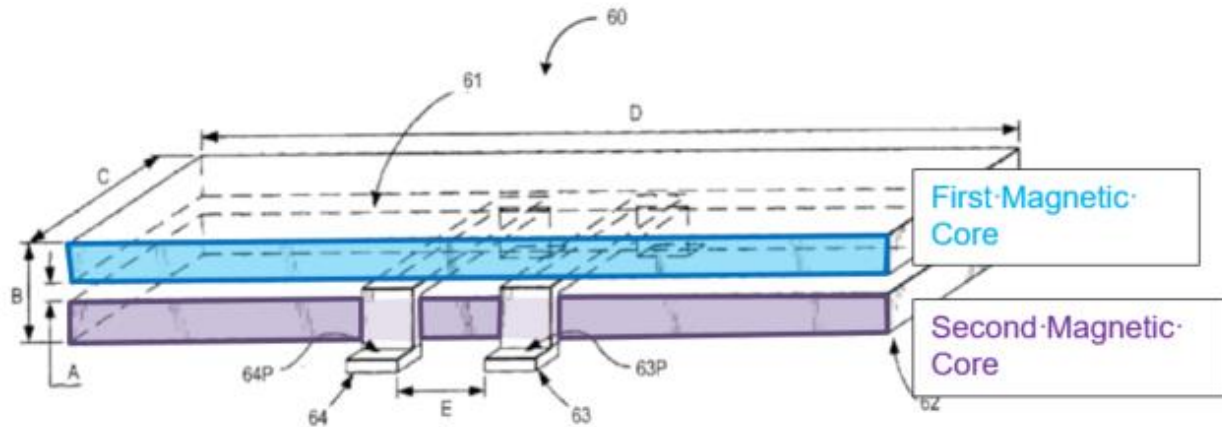


FIG. 5

*Id.* at Fig. 5 (annotations added).

Even ignoring this, the "passageway" Volterra points to cannot be the claimed passageway. In the asserted '408 and '955 Patent claims, the windings are wound at least partially through the passageway. But the Figure 5 "passageway" is defined *by* the windings:

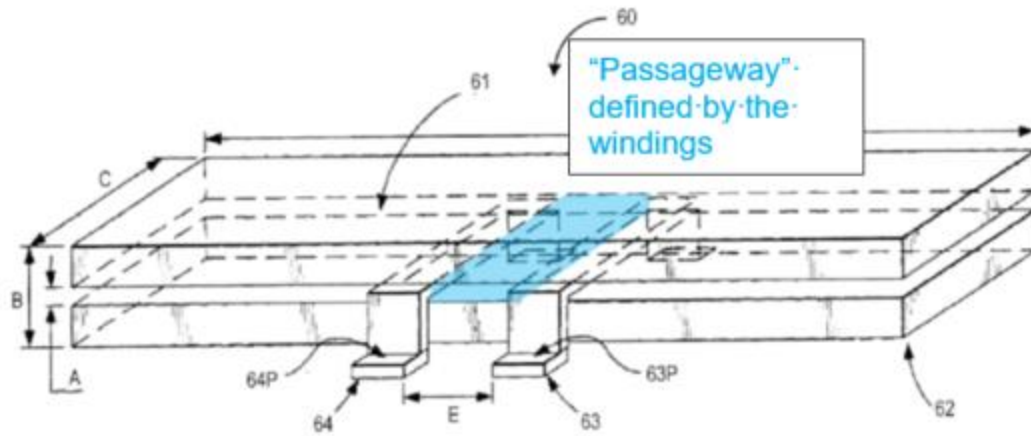


FIG. 5

'408 at Fig. 5 (annotated). The windings cannot be wound *through* a passageway if they form the passageway walls.

Further, all the claims limitations recite a passageway within a single magnetic core, as the applicant also disclaimed during prosecution. When asked what a gap means, the applicant stated “the ‘gap’ recited in Claim 39 *is not* the ‘passageway’ of claim 36,” explaining that “a” or “the” magnetic core forming a passageway means “a passageway within a single magnetic core,” not “two magnetic core elements separated by gap.” JA-008-JA-038 at JA-030-JA-031.

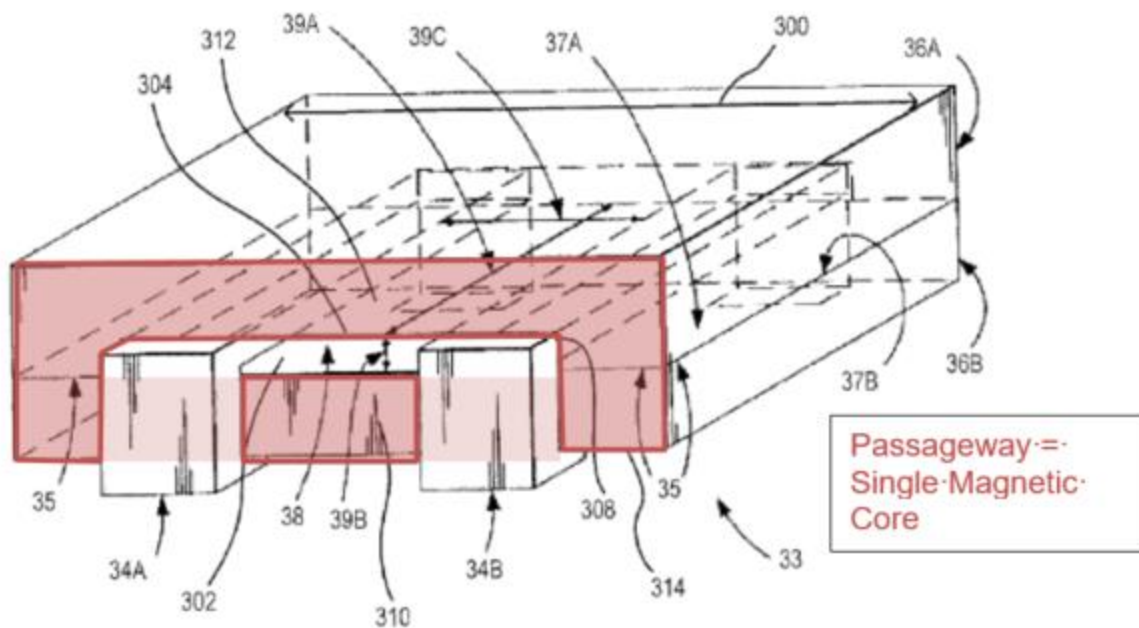


FIG. 2

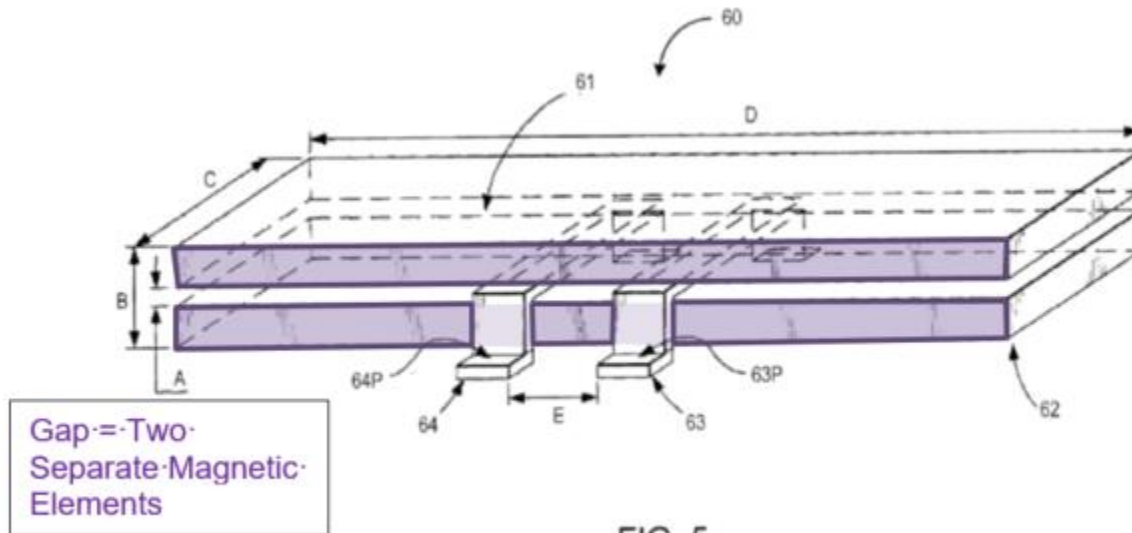


FIG. 5

'408 Patent at Figs. 2, 5 (annotations added).

Volterra, ignoring this disavowal, argues that because Claim 39 of this office action (the two-core gap structure) depends on Claim 36 (the single core

passageway structure), the applicant cannot have meant these to be mutually exclusive. Joint Brief at 72. But the applicant defined these structures as exclusive. The applicant’s definition controls.

Volterra’s argument that the specification *also* discloses two-core structures with gaps misses the point. MPS is not contending gaps are unsupported by the specification. Rather, in light of the language of the ’408 and ’955 claims, and the applicant’s disclaimer, gaps are not *claimed* in the asserted claims. “[R]ead in the context of the specification, the claims of the patent need not encompass all disclosed embodiments.” *TIP Sys., LLC v. Phillips & Brooks/Gladwin, Inc.*, 529 F.3d 1364, 1373 (Fed. Cir. 2008). Here, they do not, and instead are directed to embodiments with *one* core, not two.

**G. “[a/the] magnetic core forming a passageway” (Claims 1, 12, 16, and 23 – ’955 Patent)**

Volterra’s Construction	MPS’s Construction
plain meaning	“a passageway within a single magnetic core, rather than two magnetic core elements separate by a gap”

**1. Plaintiff’s Opening Position**

For this term, MPS’s construction introduces the same limitations (and thus corresponding deficiencies) identified above with regard to its “a magnetic core including ... N-1 passageways” construction, namely, that the core be “single” and second, that the core not be comprise of “two magnetic core elements separated by



a gap.” However, as stated above, both limitations stand inapposite to disclosed embodiments in the specification. Since the ’955 Patent and the ’408 Patent share the same specification, the arguments presented above with regard to “a magnetic core including ... N-1 passageways” apply to this term as well.

Since MPS’s construction would read out certain embodiments and improperly limit the scope of the claims, it must be rejected.

## **2. Defendant’s Answering Position**

For the same reasons as described above for the term “a magnetic core including . . . N-1 passageways” in the ’408 Patent, the applicants specifically defined this term as “a passageway within a single magnetic core, rather than two magnetic core elements separated by a gap.” *See supra*, §F.2.

## **3. Plaintiff’s Reply Position**

For this term, MPS presents no additional arguments besides those presented with regard to its “a magnetic core including ... N-1 passageways” construction. As stated above, MPS’s construction for that term is both improper and unsupported. Since MPS’s construction would read out certain embodiments and improperly limit the scope of the claims, it must be rejected.

## **4. Defendant’s Sur-Reply Position**

*See supra*, §F.4.



**H. “N connecting magnetic elements” / “each connecting magnetic element being coupled to the first and second magnetic elements” (Claim 14 – ’408 Patent)**

Volterra’s Construction	MPS’s Construction
plain meaning	“N magnetic elements for physical connection” / “each connecting magnetic element physically connected to the first and second magnetic elements”

**1. Plaintiff’s Opening Position**

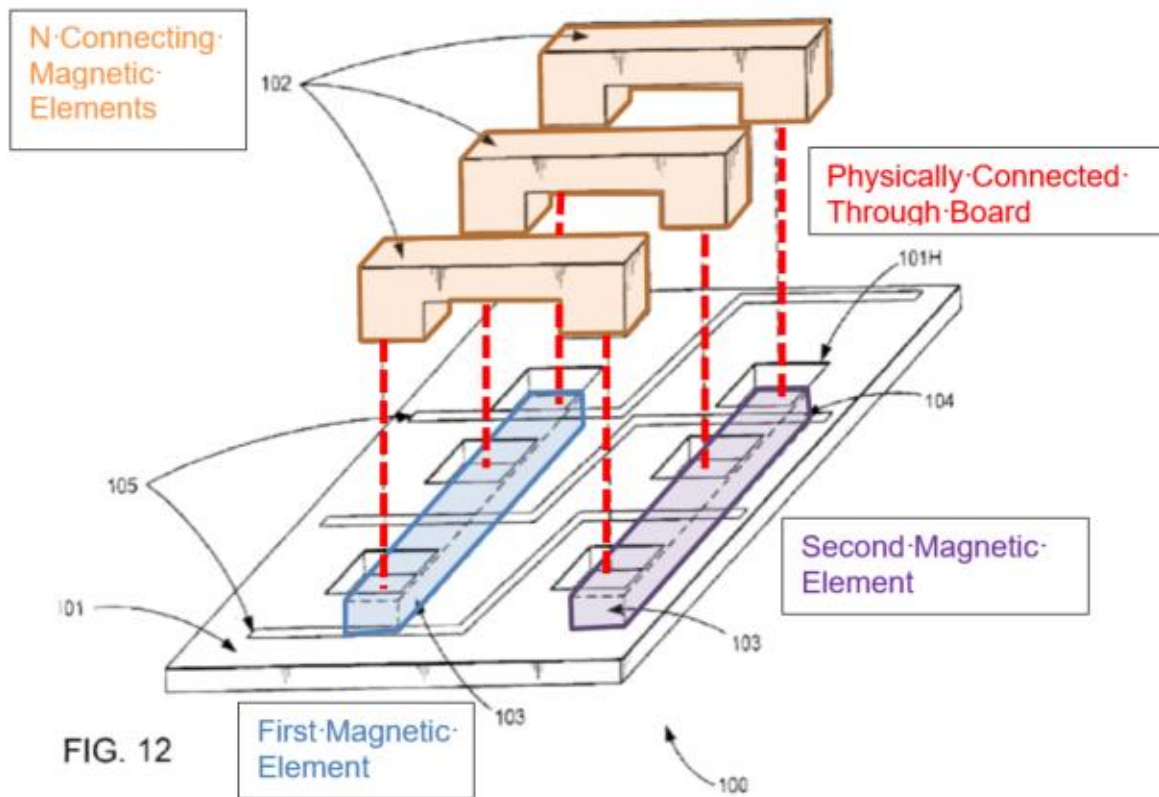
In construing this term, MPS imparts the same physical limitation on two separate elements – namely, that both “connecting” and “being coupled” require a “physical connection.” MPS’s construction does not make sense when the claim is read as a whole and is contradicted by embodiments described in the specification. Neither phrase requires a “physical connection.”

MPS violates black letter law in attempting to import limitations from the specification into the claims. *Phillips*, 415 F.3d at 1323 (“We also acknowledge that the purpose underlying the *Texas Digital* line of cases — to avoid the danger of reading limitations from the specification into the claim — is sound.”). The plain language of the claim does not support the limitation MPS desires. In pertinent part, claim 14 recites “a magnetic core including a first and a second magnetic element and N connecting magnetic elements.” (D.I. 134-2, cl. 1.) Thus, the only requirement of the connecting elements is that they be “magnetic.” There is no requirement that the connecting elements physically join any of the other

structural elements. Claim 14 goes on to state “each connecting magnetic element being coupled to the first and second magnetic elements.” Here again, no physical connection is recited. Indeed, the specification specifically states that coupling is possible with *no* physical connection. (*Id.* at 10:28-31 (“The bar magnetic cores 152, 153, in this embodiment, **do not** physically connect to each other but rather affix to the sides of 156, 157 such that **coupling of the inductor 150 is weaker**”)) (emphasis added).

## 2. Defendant’s Answering Position

The ’408 Patent is clear that the “connecting” magnetic elements of claim 14 are intended to *physically* connect the first and second magnetic elements. ’408 Patent, 9:48-10:20. Indeed, the specification explains that the connecting magnetic elements “physically couple” the bus bars that make up the first and second magnetic elements. ’408 Patent at 9:52-54. Moreover, the specification uses “connect” and “staple” synonymously. ’408 Patent at 9:52-58 (“The staple magnetic cores 102 *may connect, or staple*, through PCB 101 to bus bars 103 to form a plurality of magnetic core cells.”). This physical connection can be seen most clearly in Figure 12.



'408 Patent at Fig. 12 (annotations added).

Volterra improperly seeks to broaden the scope of the term by proposing a “plain meaning” construction that would not require a “physical connection.”

Volterra’s proposal is incorrect for several reasons.

First, it is inconsistent with the positions Volterra took in the '408 Patent IPR. There, to overcome prior art, Volterra argued the connection between magnetic elements had to be physical because “eliminating air gaps in the outer legs, but not the center leg, would have led to the mechanical instability.” JA-204-JA-281, IPR2020-1348, Paper 8, Patent Owner’s Preliminary Response at JA-274-

JA-276. But eliminating the air gaps between the magnetic elements would necessarily make the connection physical. Volterra cannot now reverse course and argue that “connecting” does not require a physical connection between the elements. *See Aylus*, 856 F.3d at 1359-62.

Second, the only intrinsic evidence Volterra’s construction cites in passing is three lines from the specification referring to Figure 14, *see* Joint Brief at 82 (citing D.I. 134-2 at 10:28-31), but this embodiment is not the one described in claim 14 of the ’408 Patent. During prosecution, the patentee *elected Figures 11-13* as the invention the ’408 patent would claim in response to a restriction requirement (which was not traversed). JA-051-JA-058, ’408 Patent Prosecution History, Response to Restriction Requirement (March 26, 2008) at JA-057-JA-058. The embodiment in Figures 11-13—what the ’408 patent actually claims—as described above and in contrast to unelected Figure 14, requires the connecting elements to physically connect the first and second magnetic elements. ’408 Patent at 9:48-10:20. That Figure 14 may not require a physical connection is irrelevant—it is not the elected invention.

Further, there is no indication in the specification that Figure 14 is intended to support “connecting magnetic elements.” The specification does not describe the structure of Figure 14 as “connecting magnetic elements,” but instead says that the “bar magnetic cores [of Figure 14]...do not physically connect to each other.” ’408

Patent at 10:28-30. Volterra’s reliance on this language to construe claim 14 of the ’408 Patent is misplaced—because Figure 14 is an unelected embodiment it describes exactly what the invention claimed in the ’408 Patent *is not*, demonstrating why claim 14 requires “connecting” to be physical as in Figures 11-13, the elected embodiment. While there could potentially be overlap between elected and unelected inventions, the invention of Figure 11-13 was what the examiner considered during prosecution, and it require a physical connection.

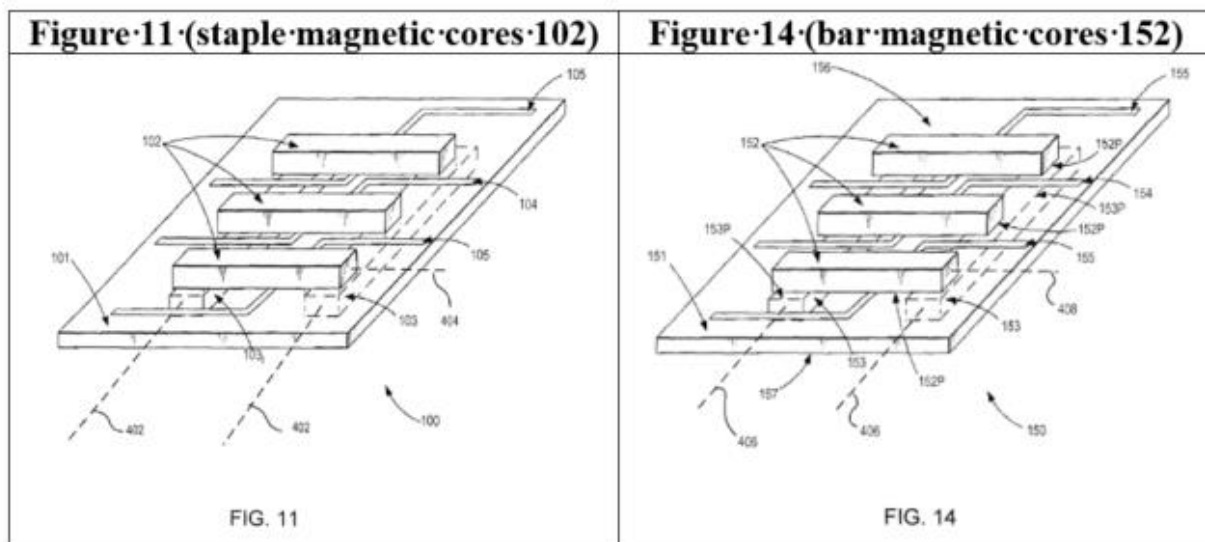
Third, Volterra confuses the definition of “coupled” in the context of inductors with how it is used in this term, in the context of core structure. Joint Brief at 81-82. Coupling, as it is used in the term “coupled inductor,” refers to the coupling of magnetic *fields*, not the ferrous material that makes up the structure of a magnetic core. However, as used in this term regarding connecting structural core elements, coupling refers to the connection of physical magnetic core elements.

### **3. Plaintiff’s Reply Position**

MPS presents no intrinsic evidence to support its construction, which introduces a “physical” limitation. Instead, MPS illogically states that Volterra “seeks to broaden the scope of the term by proposing a ‘plain meaning’ construction that would not require a ‘physical connection.’” (Joint Brief at 83-84.) MPS’s position makes no sense. The plain meaning is just that. Volterra has

introduced nothing that would broaden the construction. MPS, on the other hand, seeks to add a “physical” limitation to narrow the scope of the claims. (*Id.* at 82.)

MPS first focuses on specific embodiments involving staple magnetic cores. (*Id.* at 82-83.) MPS apparently seeks to import the “physically couple” description of those embodiments into the claim as a limitation. (*Id.*) MPS justifies its position by stating that the specification uses “connect” and “staple” synonymously. (*Id.*) In a few embodiments regarding “coupled inductor 100,” “[t]he staple magnetic cores 102 may connect, or staple, through the PCB 101 to bus bars 103 to form a plurality of magnetic core cells.” (D.I. 134-2 at 9:48-54; FIGs. 11-13.) But in other embodiments “[s]imilar to coupled inductor 100,” the “bar magnetic cores 152, 153 . . . do not physically connect to each other but rather affix to the sides of 156, 157 [of PCB 151].” (*Id.* at 10:21-31; FIG. 14.)



Thus, MPS once again improperly seeks to limit the claim term to particular embodiments while excluding other embodiments.

MPS's next argument regarding Volterra's IPR brief is similarly flawed. MPS inaccurately asserts that "to overcome prior art, Volterra argued the connection between magnetic elements had to be physical because 'eliminating air gaps in the outer legs, but not the center leg, would have led to the mechanical instability.'" (Joint Brief at 83-84.) Volterra actually argued that a POSITA would not have been motivated to make this change because of mechanical instability, not that the claims required a physical connection: "A POSITA would have understood that eliminating air gaps in the outer legs, but not the center leg, would have led to the mechanical instability and thus resulted in a need for precise gap fillings in the outside legs." (JA-204-JA-281 IPR2020-1348, Paper 8, Patent Owner's Preliminary Response at JA-274.) Volterra argued that this motivation would also be lacking because "precise gap filling" was contrary to the teachings of the prior art at issue. (*Id.*)

MPS goes on to make an odd argument regarding which figures remain part of the specification after a restriction requirement—arguing that the Court should not consider Figure 14 because Volterra elected Figures 11-13 in response to a restriction requirement. (Joint Brief at 84.) But MPS cites no law to support the idea that the specification no longer includes the unelected figures. And MPS

itself relies on these unelected figures throughout its responsive brief. (*See, e.g., id.* at 64, 65, 67, 96.)

Furthermore, in responding to the restriction requirement, Volterra specifically stated that “at least some of the elected claims may read upon *more than one of the 15 identified drawing sets.*” (JA-051-JA-058., ’408 Patent Prosecution History, Response to Restriction Requirement (March 26, 2008) at JA-057-JA-058 (emphasis added).) Thus, the prosecution history refutes the necessary “clear and unmistakable” disavowal of all figures other than 11-13 as MPS asserts. *Plantronics, Inc. v. Aliph, Inc.*, 724 F.3d 1343, 1350-51 (Fed. Cir. 2013) (no unambiguous disclaimer where patentee elected certain figures without traverse but disagreed with the PTO as to the claim scope).

MPS’s final argument attempting to distinguish two varieties of “coupled” also lacks merit. MPS argues without support that “coupled” in “coupled inductor” refers to coupling of magnetic fields, but “coupled” in “each connecting magnetic element being coupled to the first and second magnetic elements” refers to a physical connection. (Joint Brief at 85.) The claim language itself is fatal to this argument because it uses the terms “connecting” and “coupled” in the same claim element. Different words in the same claim are presumed to mean different things. *Bancorp Servs., L.L.C. v. Hartford Life Ins. Co.*, 359 F.3d 1367, 1373 (Fed. Cir. 2004) (“[T]he use of both terms in close proximity in the same claim gives rise to

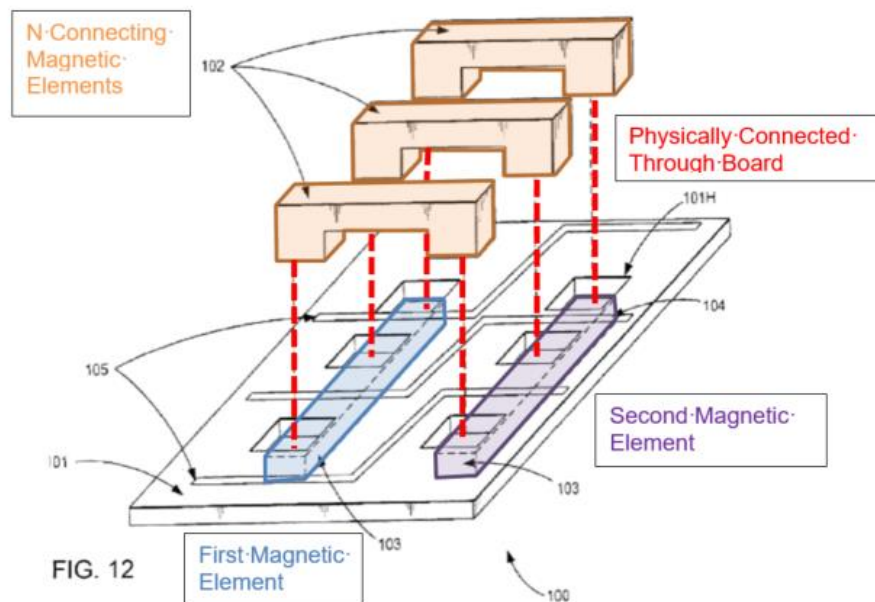


an inference that a different meaning should be assigned to each.”). The patentee knew how to use the word “connecting” when it wanted to reference a physical connection. Thus, there is no basis to assert that “coupled” is used in claim 14 to mean “physically connected.”

#### 4. Defendant’s Sur-Reply Position

The specification and claims show the connecting magnetic elements are for physically connecting the other magnetic elements. Joint Brief at 82-85.<sup>12</sup> Volterra contends “connecting elements” must only be magnetic, rendering “connecting” meaningless. Volterra is wrong.

Figure 12 shows the connection is physical:



<sup>12</sup> Volterra’s incorrect claim that MPS “presents no intrinsic evidence” is directly contradicted by MPS’s brief. *Compare* Joint Brief at 85 *with* Joint Brief at 82-85 (*citing* ’408 at 9:48-10:20, 10:28-31, Figs. 12, 14; JA-051-JA-058 at JA-057-JA-058, JA-204-JA-281 at JA-274-JA-276).

'408 at Fig. 12 (annotations added). None of Volterra's intrinsic evidence rebuts this.

Volterra criticized MPS for "focusing on specific embodiments," claiming Figure 14 shows an embodiment without physical connections. Joint Brief at 86-87. But the '408 Patent *does not claim* the embodiment in Figure 14. Figure 14 is a "similar" embodiment, not the same embodiment. '408 at 10:21. The applicant elected Figures 11-13 for prosecution, not 14. Joint Brief at 82-85 (*citing* JA-051-JA-058, JA-057-JA-058). Whether the applicant alleged claims "may" read on unelected figures as well does not mean they must. The examiner and applicant clearly considered the elected embodiment the most relevant portion of the specification, and *it* is the only embodiment that uses connecting elements, not the separate Figure 14 embodiment. The specification emphasizes the "bar magnetic cores" of Figure 14 are *not* connecting anything; only the "staple magnetic cores" are described as connecting. *Compare* '408 at 10:21-31 *with* 9:48-58.

Volterra's IPR statements also support MPS's point. Joint Brief at 87-88. Volterra argued claim 14 was not obvious because a POSITA would not eliminate air gaps in the outer legs of the prior art. JA-204-JA-281 at JA-274. Volterra therefore admitted these air gaps *would* need to be eliminated to infringe claim 14—forming a physical connection. Volterra cannot now rewrite this claim to render connecting meaningless.

## I. “planar surface” (Claim 23 - ’955 Patent)

Volterra’s Construction	MPS’s Construction
plain meaning	“flat surface”

### 1. Plaintiff’s Opening Position

In construing “planar surface” as “flat surface,” MPS appears to replace a well understood specific term with a generic synonym, whose appropriateness is at best questionable. However, it is inappropriate to substitute the actual term used in a claim with a synonym. *Int’l Rectifier Corp. v. IXYS Corp.*, 361 F.3d 1363, 1374 (Fed. Cir. 2004) (“Had the inventor meant ‘adjacent,’ he could have used that word. However, we must consider the word that the inventor actually chose . . .”).

The choice of words is particularly significant here, where the intrinsic evidence demonstrates that the alternate word was known and used by the inventor. The term “flat” is used in the specification to describe certain aspects of an embodiment. (D.I. 134-2 at 4:58-59 (“As shown, magnetic core 36A is a “U-shaped” core while magnetic core 36B is an unshaped **flat** plate”) (emphasis added); 5:65-67 (“Additionally, windings 50 and 52 may be used to mount inductor 54 to the PCB 57, such as by **flat** portions 50P, 52P of respective windings 50, 52.”) (emphasis added). This usage of “flat” in the specification while describing embodiments which include planar structures suggests that “planar” has a broader meaning. See *Boehringer Ingelheim v. Schering-Plough*, 320 F.3d 1339,

1347 (Fed. Cir. 2003) (“the use of . . . “recover” . . . suggests that “isolate” does not refer solely to this process.”).

Furthermore, there is no indication that “planar surface” is the type of term that requires construction. “Claim terms are generally given their plain and ordinary meanings to one of skill in the art when read in the context of the specification and prosecution history.” *See Phillips*, 415 F.3d at 1313; *Hill-Rom Servs., Inc. v. Stryker Corp.*, 755 F.3d 1367, 1371 (Fed. Cir. 2014). The term “planar surface” is well-understood and is used in the ’955 patent according to its well-understood meaning. (D.I. 134-3 at 2:46-57; 4:15-25; 5:18-19; 6:11-13; 6:57-61; 7:32-35; 7:66-8:2; 8:27-30; 8:47-63; 9:32-35; 10:26-28; 11:45-48; FIGS. 1-10; FIG. 14; FIG. 17.) MPS’s construction is therefore unnecessary.

MPS’s proposed construction would fail to allow for the proper scope of the claim, while also being unnecessary, and should therefore be rejected in favor of the plain and ordinary meaning of the term.

**J. “contacting” (Claim 23- ’955 Patent)**

Volterra’s Construction	MPS’s Construction
plain meaning	“physically joining”

**1. Plaintiff’s Opening Position**

MPS’s construction of “contacting” creates at least two distinct problems, each of which requires rejection of MPS’s construction. First, MPS’s construction

impermissibly adds a *function* to the claim language. Second, the construction creates confusion as to the relationship between the claim elements.

As written, claim 23 merely requires the claimed windings to *contact* a planar surface different than the planar surface of the magnetic core about which the winding is wound. However, MPS's construction would require the winding to actually *physically join* the additional planar surface. Since this function is not required by the claim itself, introducing such a function through claim construction is improper. *Ecolab v. Envirochem*, 264 F.3d 1358, 1367 (Fed. Cir. 2001) (“[w]here the function is not recited in the claim itself by the patentee, we do not import such a limitation.”).

As with its construction of “N connecting magnetic elements” / “each connecting magnetic element being coupled to the first and second magnetic elements” above, MPS's construction here is also inherently confusing in that it is unclear as to what elements must be physically joined—the winding and the third planar surface, or the first planar surface and the third planar surface. As stated earlier, the purpose of claim construction is to resolve ambiguities, not to create them. *Eon Corp. v. Silver Spring Networks, Inc.*, 815 F.3d 1314, 1318 (Fed. Cir. 2016). Additionally, when a term presents no ambiguity, as is the case with the term “contacting,” it should not be construed. *Liebel-Flarsheim Company v. Medrad, Inc.*, 358 F.3d 898, 905 (Fed. Cir. 2004).

Since MPS's construction creates ambiguity rather than resolves it, its construction should be rejected in favor of the plain and ordinary meaning of the term "contacting."

## **2. Defendant's Answering Position**

The term "contact" or "contacting" does not appear in the specification. However, during prosecution the applicant claimed that paragraph 40 of the specification and Figure 2 describe the concept of "contact" or "contacting." JA-282-JA-299, '955 Patent Prosecution History, Response to Office Action (January 28, 2010) at JA-286, JA-291. Paragraph 40 describes how air or non-magnetic structure fills the space *between* the windings. *See* '955 Patent at 4:58-5:10 (corresponding patent citation). By contrast, the space on the *outside* of the windings where the winding contacts the core is not filled with air or non-magnetic structure. In view of this description, it must mean physically joining or touching the side walls of the core's passageway, so that no non-metallic material exists between the conductor and the core. These points of contact can be seen illustrated with the blue boxes in Figure 2 below:

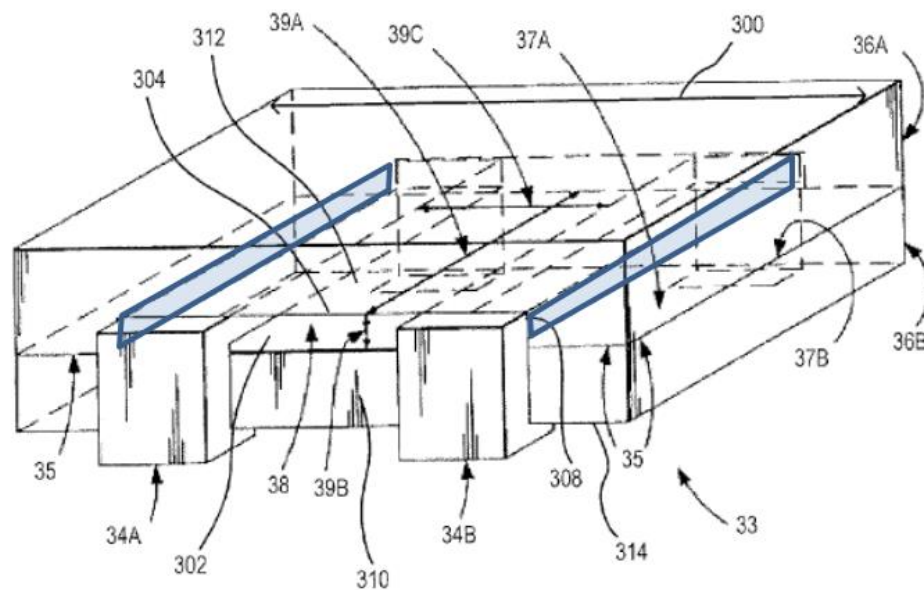


FIG. 2

'955 Patent at Fig. 2 (annotations added). This is consistent with the plain meaning of contacting as physically joining or touching. JA-193-JA-198, American Heritage College Dictionary, 4th Edition (2002), JA-196 (“a coming together or touching, as of objects or surfaces”); JA-199-JA-203, Merriam Webster's Collegiate Dictionary 10th edition (2001), JA-202 (“union or junction of surfaces.”).

Volterra misreads MPS's use of the term “physically joining” to assert confusion where none exists, specifically by arguing that MPS's construction of “physically joining” requires that something is “actually physically join[ed].” Joint Brief at 93-94. MPS's construction clearly does not implicate this alleged function:

“physically joining” means touching. And though this construction is simple, it is important: the winding must actually contact the surface because the claim says it must contact. The winding cannot merely be in the vicinity of the surface.

Similarly, MPS’s construction is not “inherently confusing in that it is unclear as to what elements must be physically joined—the winding and the third planar surface, or the first planar surface and the third planar surface,” as Volterra alleges. Joint Brief at 93-94. The claims make clear that the winding must contact the core’s planar surface. It is not MPS’s construction, nor a fair reading of MPS’s construction, that this term means the core’s planar surfaces must contact each other. Claim 23 explicitly recites that the “[first/second] winding . . . passing through the passageway along the first planar surface and contacting the [third/fourth] planar surface.” Both “along the first planar surface” and “contacting the [third/fourth] planar surface” describe how the *winding* passes through the core’s passageway. The claim clearly states that the first/second windings are physically joining or touching the core’s third/fourth planar surfaces, and Volterra’s claim of confusion is disingenuous.

Indeed, during the corresponding IPR Volterra obviously understood “contacting” to mean “physically joining” or “touching.” Volterra there argued that prior art could not invalidate because Volterra claimed “the windings would not actually contact either the left or right walls of the passageway, (corresponding to



the ‘third planar surface’ and ‘fourth planar surface,’ respectively),” insisting that the prior art could not invalidate the claim because there was no “direct contact.” JA-300-JA-381, IPR2020-1351, Paper 9, Patent Owner’s Preliminary Response at JA-367-JA-368. Thus, Volterra has disclaimed any construction that does not require direct contact, *i.e.*, physically joining or touching. *See Aylus*, 856 F.3d at 1359-62.

### 3. Plaintiff’s Reply Position

MPS uses the *disputed term* (contact) to describe its own construction: “though [MPS’s] construction is simple, it is important: the winding must actually **contact** the surface because the claim says it must **contact**.” (Joint Brief at 97 (emphasis added).) MPS is able to repeatedly use the disputed term because it has a known meaning in the art. And MPS’s ability to use the term “contact” with ease dispels any need to construe it.

MPS once again resorts to college dictionaries rather any semblance of the intrinsic record. However, here the definitions present an additional problem for MPS—they do not support the construction that MPS proposes (“physically joining”) but rather different constructions, e.g., “touching.” (*Id.* at 96-98.) Indeed, MPS subsequently defines its own construction to mean “touching.” (*Id.* at 97 (“‘physically joining’ means touching”).) Thus, at the very least, it is unclear which definition MPS is actually proposing—“physically joining” or “touching.”

As evident in this context, “physically joining” creates confusion because it is well understood that two objects may be physically joined by a third item (glue, epoxy, screws, nails, etc.). “Contacting” does not invoke such confusion. Furthermore, MPS’s new disclosure of “touching” creates additional confusion because it would appear illogical to claim that two items that are touching are *necessarily* physically joined.

MPS’s arguments regarding the IPRs actually support Volterra’s position. Indeed, all MPS accomplishes is to show that Volterra properly and consistently used the *disputed term*. (JA-300-JA-381 IPR2020-1351, Paper 9, Patent Owner’s Preliminary Response at JA-368 (“the windings would not actually **contact** either the left or right walls of the passageway”) (emphasis added); *id.* (“Direct **contact** is not necessary to achieve sufficient magnetic coupling”) (emphasis added); *id.* at JA-369 (“the Petition fails to show that the combination . . . would have provided first and second windings that **contact** the third and fourth planar surfaces . . .”) (emphasis added).) Thus, MPS fails to show that Volterra ever used MPS’s proposed construction in place of the claim term, which further indicates that the term has a plain meaning in the art. Indeed, MPS itself never used either of its proposed constructions in the IPR.

#### 4. Defendant's Sur-Reply Position

Windings that are “contacting” as claimed must physically join or touch the core at the points shown:

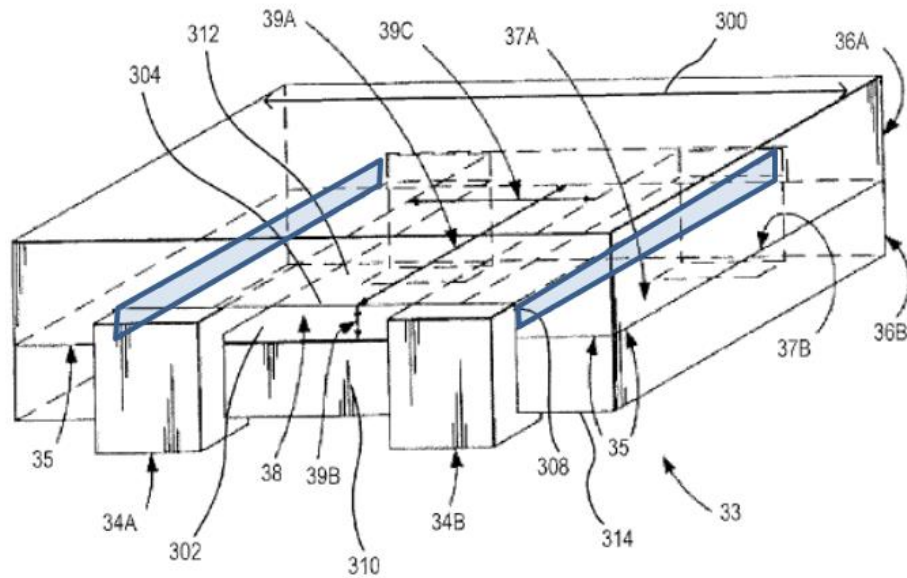


FIG. 2

'955 Patent at Fig. 2 (annotations added). Volterra claims it disagrees but has not articulated an alternative meaning, essentially construing the term as “not what MPS says.”<sup>13</sup>

To simplify: MPS intends no difference between “join” and “touch.” MPS is not claiming some glue connects the surfaces; rather the surfaces must directly

<sup>13</sup> Volterra incorrectly claims MPS does not rely on the intrinsic record. *Compare* Joint Brief at 98-99 *with* Joint Brief at 95-98 (*citing* '955 at 4:58-5:10, Fig. 2; JA-282-JA-299 at JA-286, JA-291; JA-300-JA-381 at JA-367-JA-368).

touch. Joint Brief at 99. Volterra appears to admit it agreed in the IPR. *Id.* If Volterra agrees that the windings and planar surfaces must touch, then there is no dispute. If not, Volterra should have identified its alternative construction.

**K. “extending to the bottom side of the magnetic core” (Claim 12 - ’955 Patent)**

Volterra’s Construction	MPS’s Construction
plain meaning	“folded underneath the magnetic core”

**1. Plaintiff’s Opening Position**

MPS’s construction requires that the windings be folded under the magnetic core rather simply extending to the bottom of it. No such requirement is stated in claim 12. By contrast, claim 4 expressly recites “at least one of the tabs being folded underneath the magnetic core.” Clearly, when the patentee wanted to say that the winding must be “folded underneath the magnetic core,” it knew how to say exactly that as it did in claim 4. MPS should not be permitted to rewrite completely the words chosen by the patentee for claim 12.

MPS cannot save its construction by pointing to the words “for soldering to a printed circuit board” at the end of claim 12. Nowhere does the ’955 patent state that the windings (or tabs) must be “folded underneath” in order to be soldered to a printed circuit board. To the contrary, the ’955 claims themselves show the windings may be solderable to a printed circuit board without being folded underneath. Claim 2 of the ’955 Patent recites the formation of tab at the end of a

winding, “each winding having two ends, each end forming a tab.” Claim 3 adds the dependency that one of the tabs be solderable to a printed circuit board, “at least one of the tabs being solderable to a printed circuit board.” Claim 4 adds the dependency that one of the tabs be folded underneath the magnetic core, “at least one of the tabs being folded underneath the magnetic core.” Since claim 3 depends from claim 2, but not from claim 4, it is clear that the patentee contemplated solderable tabs that are *not* folded underneath the magnetic core. *Wenger Mfg. v. Coating Machinery Systems*, 239 F.3d 1225, 1233 (Fed. Cir. 2001) (“Under the doctrine of claim differentiation, each claim in a patent is presumptively different in scope.” (citing *Comark Communications, Inc. v. Harris Corp.*, 156 F.3d 1182, 1187, 48 USPQ2d 1001, 1005 (Fed. Cir. 1998))). Finally, the limitation MPS incorporates into the construction is described as one beneficial feature of *one embodiment* described in the specification. (D.I. 134-3 at 4:15-16 (FIG. 2 shows a two-phase coupled inductor 33, in accord with **one embodiment**”) (emphasis added); 5:11-12 (“FIG. 2 also illustrates **one advantageous** feature associated with windings 34A, 34B”). It is axiomatic that importing such a limitation is improper. *MED-EL Elektromedizinische Geräte Ges.m.b.H. v. Advanced Bionics, LLC*, No. 1:18-cv-01530-JDW, at \*2 (D. Del. Oct. 9, 2020) (“while a court must construe claims to be consistent with the specification, the

court must “avoid the danger of reading limitations from the specification into the claim”” (citing *Phillips*, 415 F.3d at 1323)).

## **2. Defendant’s Answering Position**

The specification only once describes an embodiment where the windings extend to the bottom side of the magnetic core, at 5:11-15:

FIG. 2 also illustrates one advantageous feature associated with windings 34A, 34B. Specifically, each of windings 34A, 34B is shown with a rectangular cross-section that, when folded underneath core 36B, as shown, produced a tab for soldering to a PCB, and without the need for a separate item.

*See also* Joint Brief at 47-48 (“the windings extend down and [] a little bit underneath magnetic core 36B”). Moreover, the applicant identified this language during prosecution as support for this claim (claim 12). JA-282-JA-299 ’955 Patent Prosecution History, Response to Office Action (January 28, 2010) at JA-288, JA-291 (identifying corresponding specification paragraph 41). As Figure 2 shows, the windings extend to the bottom side of the magnetic core because they fold underneath to touch it:

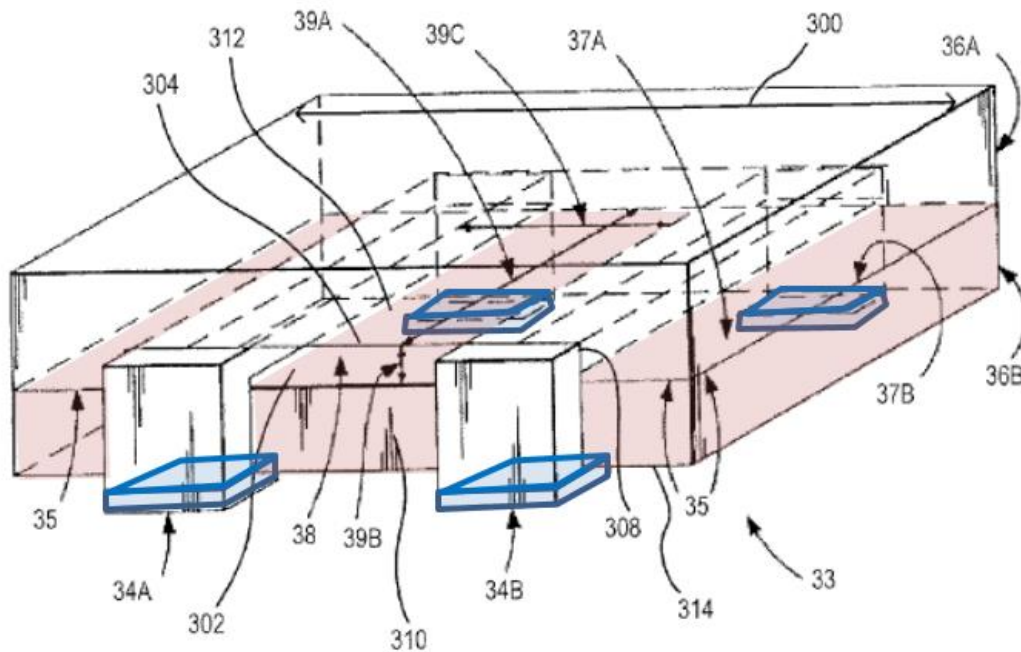


FIG. 2

'955 Patent at Fig. 2 (annotations added). This is the only embodiment that provides written description support for this “extending to the bottom side of the magnetic core” limitation. MPS’s construction is the only interpretation that is consistent with and supported by the specification and other claims.

Volterra’s construction has no support in the specification and its claim differentiation argument—that because claim 4 adds the “folded underneath” element, no other claims require it—makes no sense. Joint Brief at 100-102. Indeed, how could a winding “extend[] to the *bottom side* of the magnetic core” without going underneath it—i.e., to where the bottom side is? Volterra has no explanation. Further, claim 4 depends on claim 1—and this element (“extending to

the bottom side of the magnetic core”) appears in claim 12. Claim differentiation offers insight when examining an independent claim and its own dependent claim. But, where claim terms appear in two separate families of independent claims, claim differentiation “is not a hard and fast rule” and will be overcome by a contrary construction dictated by the written description or prosecution history. *Seachange Int’l, Inc. v. C-COR, Inc.*, 413 F.3d 1361, 1369 (Fed. Cir. 2005). That is the case here. Claim 12 requires the ends of the windings to be under the core.

Volterra attempts to prop up an overreaching infringement theory by not offering a construction. Volterra’s infringement contentions seem to hypothesize that a winding whose ends merely cross the plane of the bottom of the magnetic core “extend[s] to the bottom side of the magnetic core” as claimed. However, Volterra’s implied construction of “extending to the bottom plane of the magnetic core” is unsupported by the specification, and reads out the word “side.” It is also inconsistent with its IPR position, where Volterra described claim 12 and “extending to the bottom side” as requiring that “the ends of the conductor [be] folded down and around to the bottom of the core.” JA-382-JA-457, IPR2020-1350, Paper 9, Patent Owner’s Preliminary Response at JA-434-JA-435; *see also Aylus*, 856 F.3d at 1359-62.

Finally, Volterra’s arguments regarding “solderable” are completely misplaced. Volterra accredits a strawman to MPS, asserting that MPS must be



pointing to the language “for soldering to a printed circuit board” at the end of claim 12 as support for MPS’s construction, reasoning that the embodiment of Figure 2 states the windings are “folded underneath” in order to be soldered to a printed circuit board. Joint Brief at 101-102. However, this is not MPS’s position—MPS is not concerned with whether the windings must be solderable. Instead, as MPS explains above, this claim requires the windings to be folded underneath the core because it claims they “extend to the bottom side.”

### **3. Plaintiff’s Reply Position**

MPS presents no arguments as to why the term needs to be construed, and its proposed construction impermissibly narrows the claim. MPS repeatedly states that Figure 2 and its accompanying description provide the only support for a winding “extending to the bottom side of the magnetic core.” (Joint Brief at 103, 104.) This is demonstrably false.

Other figures, and thus other embodiments, clearly show windings (shown in green) extending to the bottom side of the magnetic core (shown in yellow). (*Compare* D.I. 134-2 FIG. 2 *with* FIG. 4.)

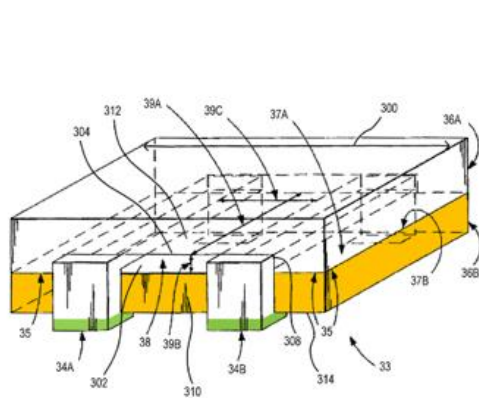


FIG. 2

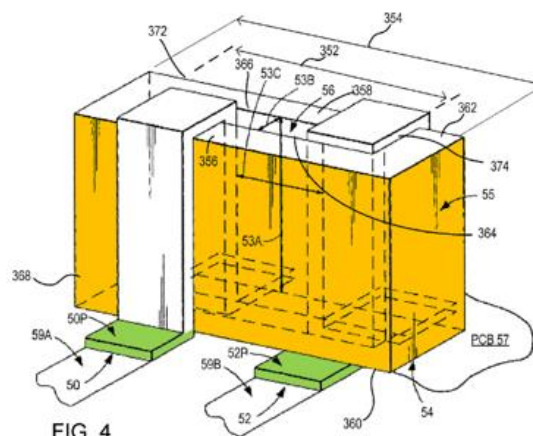


FIG. 4

In Figure 4, similar to Figure 2, the windings extend to the bottom side of the magnetic cores, as can be seen from the fact that the windings may be used to “mount” the inductor to a PCB, and because portions of the windings may be soldered “underneath” to a PCB. (D.I. 134-2 at 5:65-6:1 (“Additionally, windings 50 and 52 may be used to **mount** inductor 54 to the PCB 57, such as by flat portions 50P, 52P of respective windings 50, 52. Specifically, portions 50P, 52P may be soldered **underneath** to PCB 57” (emphasis added).) In Figure 4, a portion of the winding that extends to the bottom side of the magnetic core, 50P, also extends *away* from the magnetic core, as opposed to underneath it.

Figure 5 and its accompanying description further refutes MPS's assertion that Figure 2 is the only embodiment in which the windings (shown in green) extend to the bottom side of the magnetic core (shown in yellow). (*Compare id.* at FIG. 2 *with* FIG. 5; *see also id.* at 5:65-6:57.)

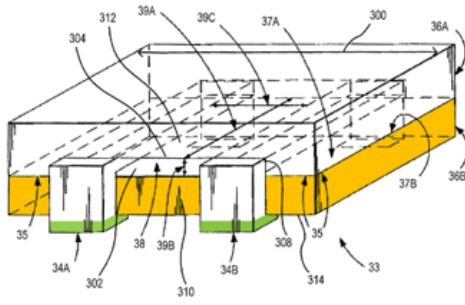


FIG. 2

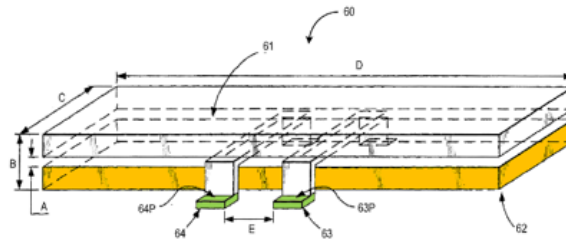


FIG. 5

In the case of Figure 5, no part of the windings extends beneath the magnetic cores. However, the windings of Figure 5 clearly extend to the bottom side of the magnetic cores as they are used to mount the inductor to a PCB. (*Id.* at 5:65-6:59 (“In another embodiment, inductor 60 may form planar surfaces 63P and 64P of respective windings 63, 64 to facilitate **mounting** of inductor 60 onto the PCB.” (emphasis added).))

Read in context with the patent’s disclosures above, Volterra’s claim differentiation evidence is dispositive. MPS itself notes that claim differentiation can only be overcome by a “contrary construction dictated by the written description or prosecution history.” *Seachange Int’l, Inc. v. C-COR, Inc.*, 413 F.3d 1361, 1369 (Fed. Cir. 2005). As shown above, a contrary construction is not only *absent* from the written description, but is in fact *refuted* by it. Thus, the principle of claim differentiation applies and mandates that extending to the bottom side not be limited to “folded underneath.” Only claim 4 requires “at least one of the tabs being folded underneath the magnetic core”—claim 12 does not.

MPS also misrepresents Volterra's IPR position. MPS states that "Volterra described claim 12 . . . as requiring that 'the ends of the conductor [be] folded down and around to the bottom of the core.'" (Joint Brief at 105). Once again, Volterra did no such thing. Rather, Volterra was addressing the prior art combination proposed by MPS, and noting that the combination presented numerous issues because, in part, one of the references required "C-shaped" cores, which could not be combined with the pre-formed magnetic cores of the other reference. (JA-382-JA-457 IPR2020-1350, Paper 9, Patent Owner's Preliminary Response at JA-434-JA-435.) Nowhere did Volterra state that claim 12 required the ends to folded down under the magnetic cores.

MPS also presents unpersuasive arguments regarding the term "side." (Joint Brief at 104-105.) MPS states that Volterra is implying a construction in which "side" is replaced by "plane," and in which "side" is read out of the claim. (*Id.*) This is a misdirection. The plain language of the claim states only that the winding extend "to" the bottom side "for soldering to a printed circuit board." As the bottom side is a solid structure with width (as depicted by item 310 in Figure 2), extending the winding "to" the bottom side requires only exactly that.

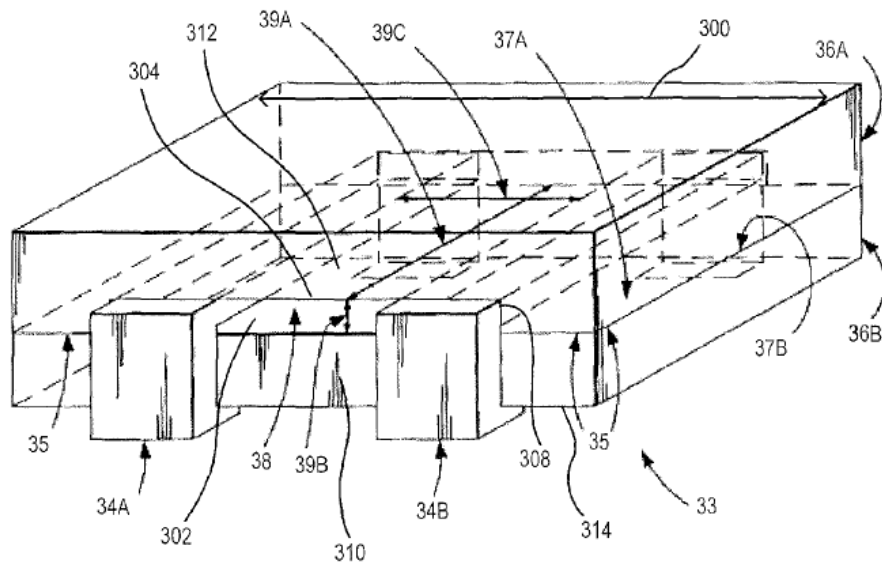


FIG. 2

The claim language does not require the winding to extend “through” or “around” the bottom side or “underneath” the bottom side as MPS requires.

Since the term is easily understood, and MPS’s construction would improperly narrow the scope of the claim, the plain meaning of the term should be adopted.

#### 4. Defendant’s Sur-Reply Position

Winding ends must reach the bottom side of the core to “extend to” it.

Volterra disagrees, contending either “extending” is only to allow “for soldering,” or that “the bottom side” is referring to the *entire* bottom core element, not a side. Both are incorrect.

First, the full context of Claim 12 shows “for soldering” and “extending” are separate requirements, both modifying the winding ends: “each winding having a respective first end and a respective second end extending to the bottom side of the magnetic core for soldering to a printed circuit board.” Each end is solderable because it is bent flat, not because it extends to the bottom side. ’955 at 5:11-15, 5:65-6:1, 6:57-59. The winding ends must do *both*.

The specification only once describes an embodiment that does, shown in Figure 2: incorrect.

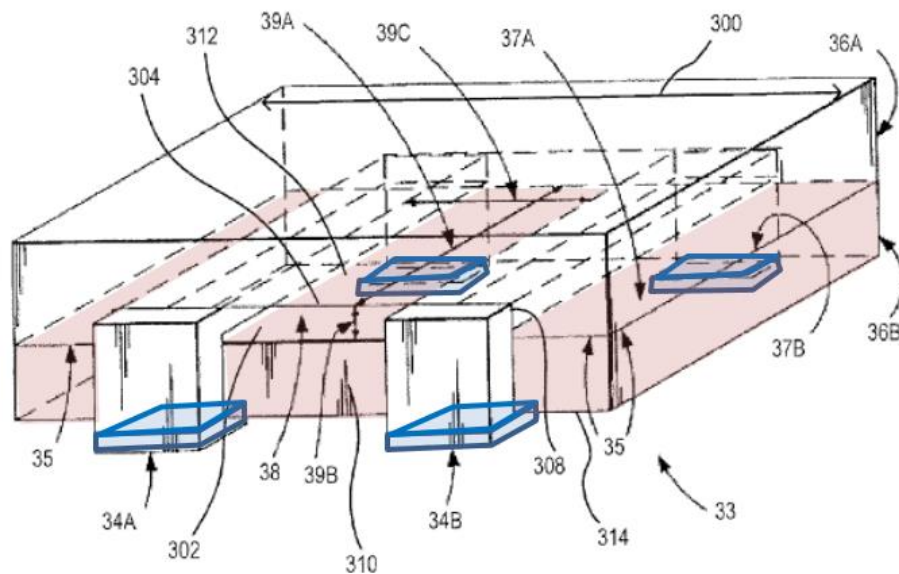
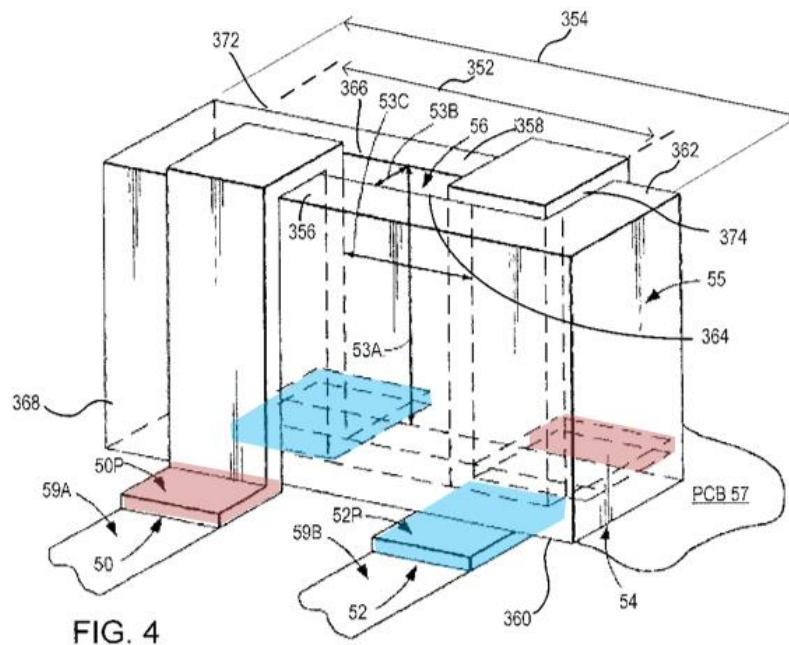


FIG. 2

*Id.* at 5:11-15, Fig. 2 (annotations added).

Volterra's ignores that Figures 4 and 5 are not claimed in claim 12. Figure 4 shows a passage extending from a top to a bottom side (not a first and second), and Figure 5 shows two core elements forming a gap (not a single magnetic core passageway). But these embodiments do show how winding ends can be solderable, but not extend to the bottom side of the core.

In Figure 4 both winding ends have solderable "flat portions 50P [and] 52P" '955 at 5:65-6:1. But one winding end extends to the bottom side of the core (blue), folding underneath, while the other end does not (red), folding outward:



*Id.* at Fig. 4. (annotated). In Figure 5 the winding ends have solderable "planar surfaces 63P and 64P." *Id.* at 6:57-59. But no winding ends extend to the bottom side of the core. All fold outward (in red) instead:

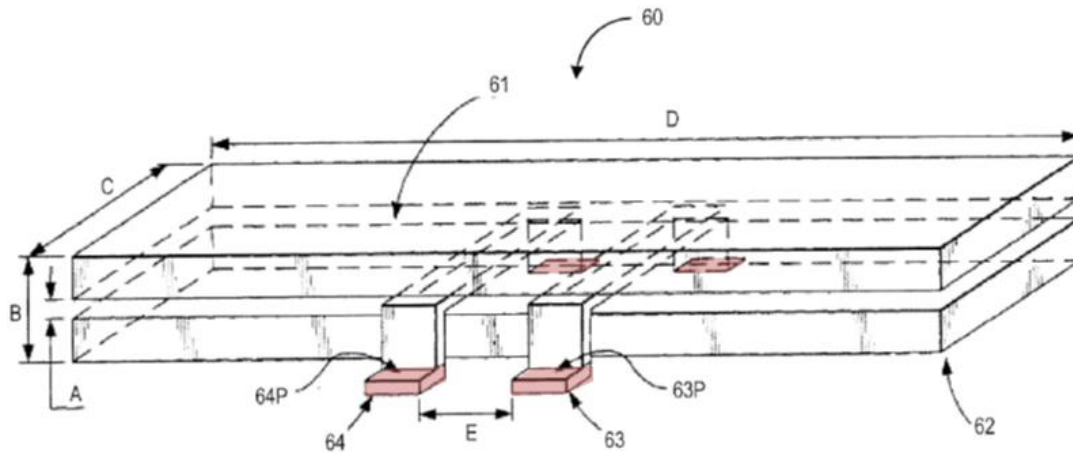


FIG. 5

*Id.* at Fig. 5 (annotated).

Second, Volterra argues the “bottom side” referenced in the claim includes the *entire* bottom core element 310, annotated in pink below.



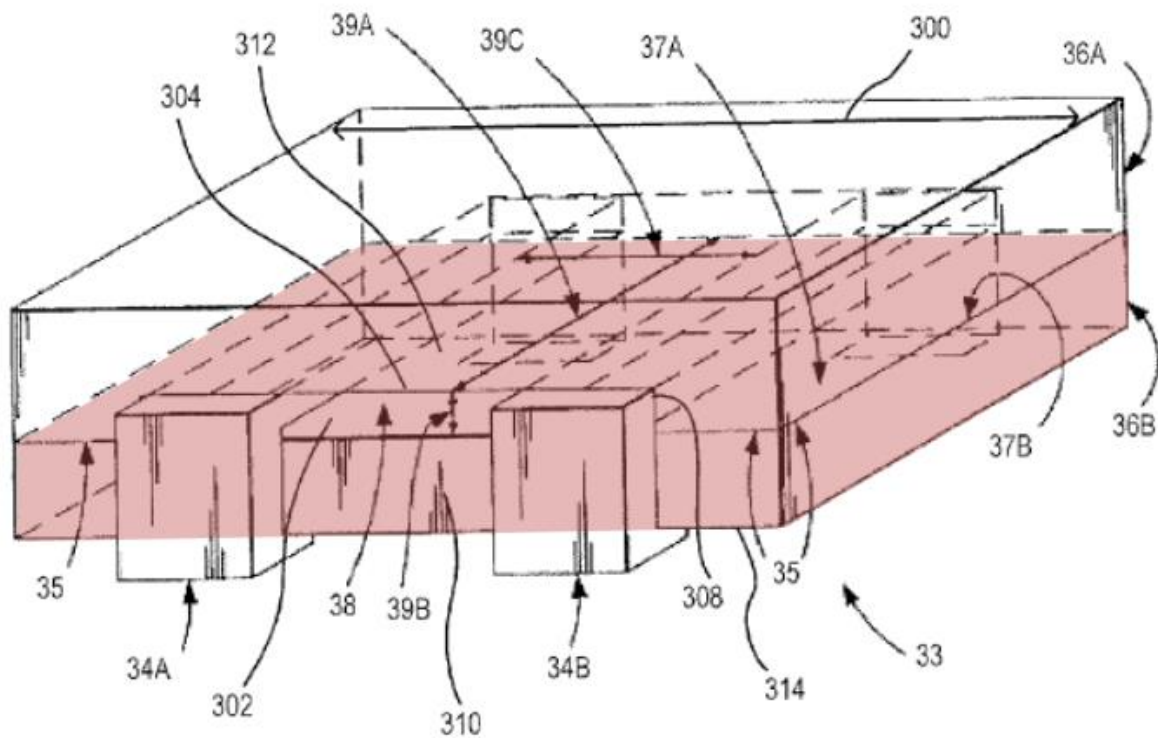


FIG. 2

'955 at Fig 2 (annotated). This is wrong at least because a winding that extended only to the top portion of this core element would meet Volterra's construction, but not reach the circuit board. Further, claim 12 references *three* "sides:" a bottom side (red lines), a first side (blue), and a second side (purple).

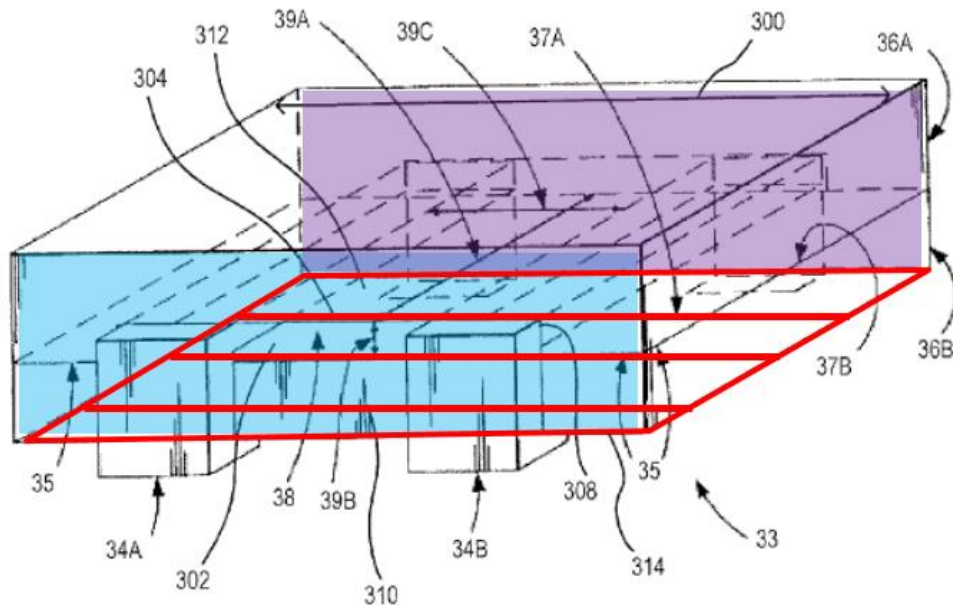


FIG. 2

*Id.* at Fig 2. Importantly, the first and second sides define the ends of the passageway and outer leg. *Id.* 13:22-29. If the entirety of core element 310 was the “bottom side,” the first and second sides would instead each include half the core:

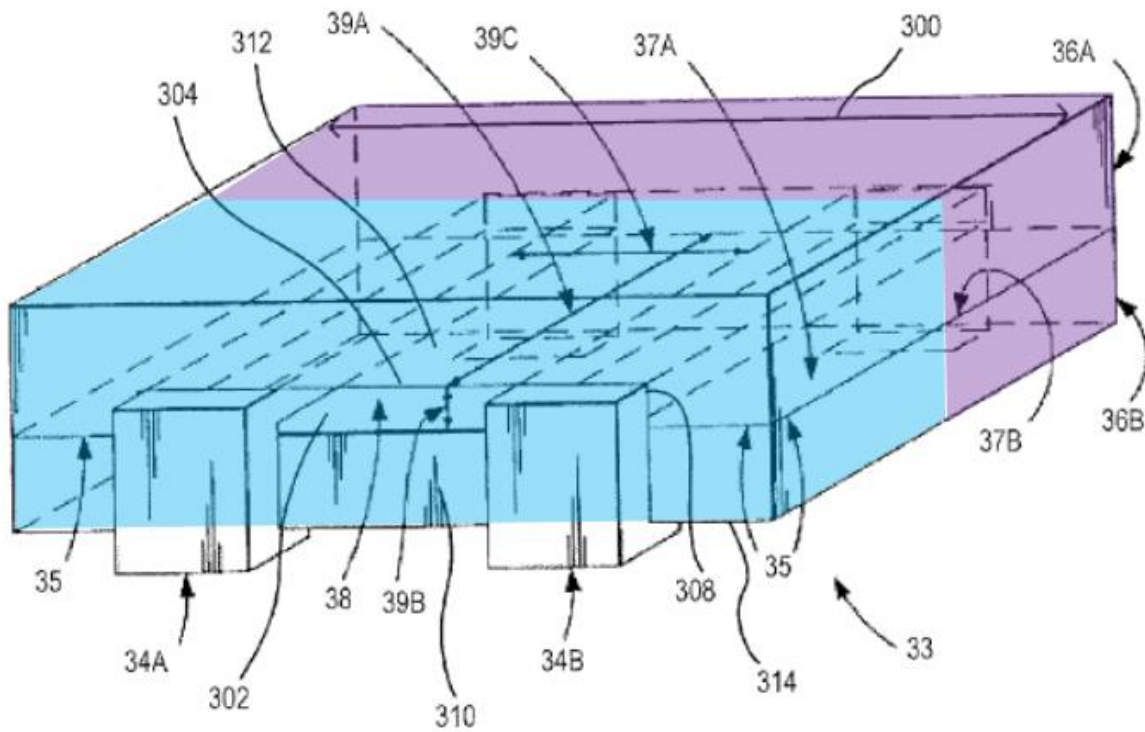


FIG. 2

*Id.* at Fig 2. How then does the passage (or outer leg) extend **from** one to the other?

The core's physical structure is defined by these sides, and each must mean the same type of thing; a plane.

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Dated: June 21, 2021

**WORD COUNT CERTIFICATION**

The undersigned counsel hereby certifies that **JOINT CLAIM CONSTRUCTION BRIEF** contains 19,742 words (exclusive of the title, caption, tables, and signature block) in Times New Roman 14-point font.

Dated: June 21, 2021

/s/ Robert M. Oakes

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